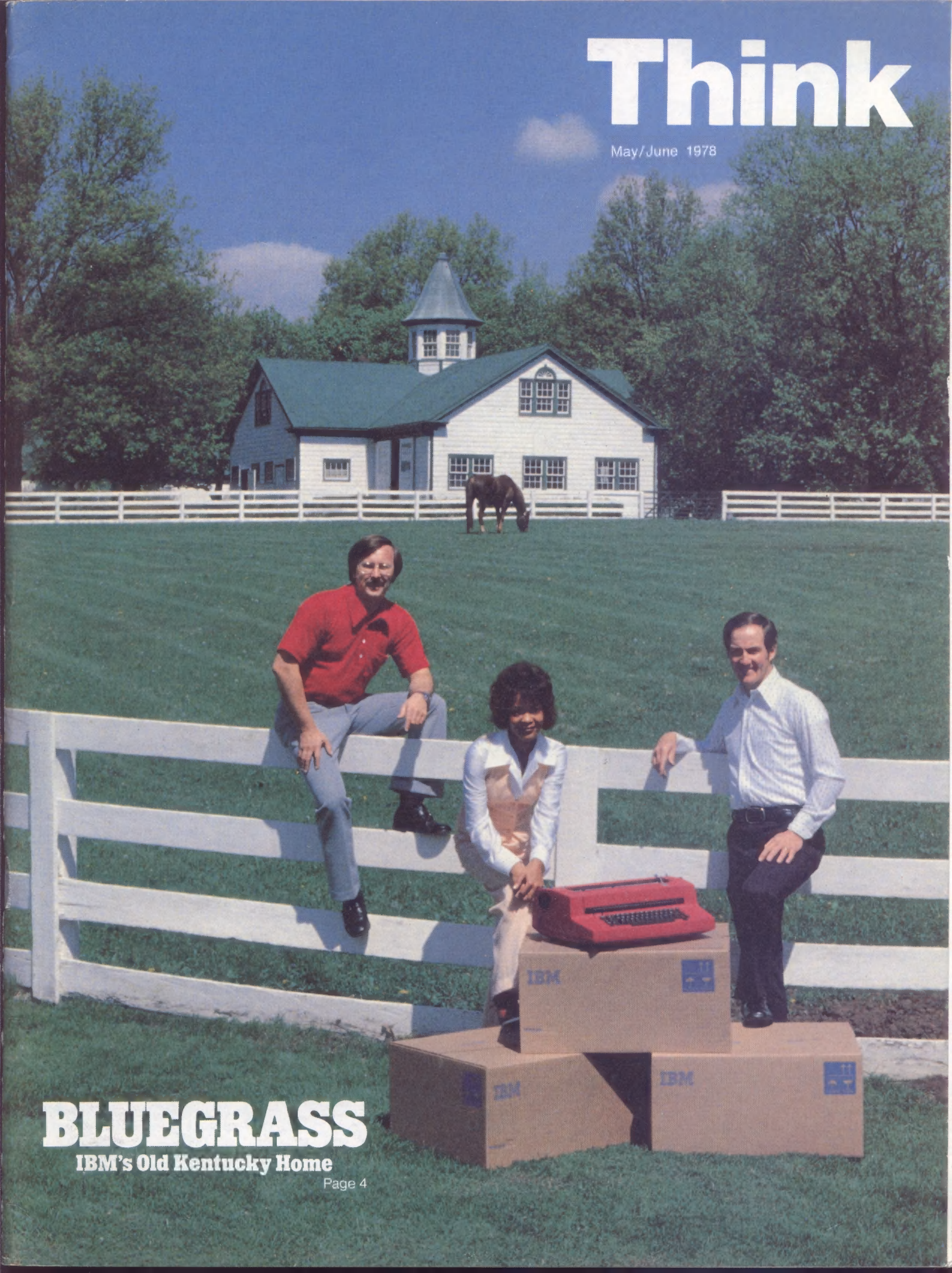# Think

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Letter from the Chairman

At long last, our day in court

For nine years now, since the filing of the Justice Department's antitrust suit in January 1969, we've been waiting for our day in court, for the chance to demonstrate how groundless those charges are.

The suit went to trial on May 19, 1975, and, after presenting testimony and entering documents for 473 trial days, the government finally rested its case on April 26, 1978.

At that point, we could have moved for dismissal on the grounds that the Government had not made a case. There might have been some advantage in doing so—but only at the cost of substantial further delay. And so we chose to press on immediately with our defense that same afternoon.

I'm sure you share with me the feeling that the sooner we get this trial finished, the sooner we shall be vindicated of the charges that have been made. We're guilty of nothing—except success in giving the customer more for less.

Big Three from the Valley

New systems are nothing new to our thousands of development and manufacturing people. Fourteen years ago, they moved the business a giant leap ahead with System/360. Six years later, they brought out System/370.

On March 17 of this year, they outdid themselves again, this time with first customer shipments from the Mid-Hudson—all on the same day—of our three biggest and newest processors—on schedule, and within 12 months of announcement day.

No one was more pleased, I'm sure, than our marketing people in the branch offices, where orders have been piling up since announcement. Now our production people around the world are going flat out in a major buildup to make possible an accelerating rate of installation.

Certainly, no industry is more competitive than ours when it comes to technological innovation. Scarcely a week goes by without some major new announcement. But thanks to our people in development and manufacturing, we've demonstrated once again that we're second to none in R & D. And no one can match us when it comes to getting the product out the door.

Room at the top

I've been asked if retirement at age 60 still holds for corporate officers, in view of the new law that lifts the ceiling on mandatory retirement to 70 for some people, 65 for others.

No, it does not. However, we continue to believe that retirement at 60 for those in certain key positions is a sound practice, good for the business and for the individuals themselves.

It's important, I believe, that we encourage some reasonable rate of turnover in those key jobs. In part, to make room for others who are coming along and who have earned the chance to show what they can do. In part, to maintain the momentum that comes with change—whether it be a change in product, a change in organization, or a change in people.

One of my nicest jobs

Rarely have I enjoyed an extracurricular job as much as the one I now hold as national chairman of Junior Achievement. This is an organization that encourages young people to learn what business is all about by undertaking small part-time ventures of their own.

I find it stimulating not only because I believe it's something worth doing, but also because it allows me to meet and talk with these youngsters.

I am getting to know a little about what they are thinking, how they feel about business, and what their hopes are for the future. Each time I return from a visit, I come home refreshed. For, almost without exception, I find them thoughtful and open-minded, enormously optimistic and eager to share in what the world holds for them.

Next time some cynic tells you the American business system has no future, tell him to get out and meet the next generation.

Frank Cary

Up front What's doing in the industry, the business, and with people here and there.

Letters

Catch up To keep you up to date on happenings you may have missed.

Off to a fast start at Monte Carlo

Along with the roadworthy racing cars at a recent race in Monte Carlo, there was a late entry: IBM's new 5110 computer. Ten days after its announcement in January, the 5110 participated in the trials.

As the race commissioner inspected each car, he entered the driver's name, car registration and trademark into the computer, and the physical characteristics of the car appeared on a video screen—chassis specifications, wheels, steering, springs, brakes, power. The comprehensive checklist speeded the line of cars waiting for inspection stickers.

During the race, five IBM 5100 Portable Computers linked to display screens were used to compute team and individual results and lap times. Results were displayed for the press.

A tough town for potholes

The fastest way to get a street-light fixed, a pothole repaired or a catch basin unclogged in Yonkers, N.Y., is to complain to a computer. This city of some 200,000 persons, near IBM's corporate headquarters in Armonk, N.Y., has a hot line operation tied to a computer to speed responses to citizen complaints.

Dispatchers at the Yonkers Action Center System, working round-the-clock and seven days a week, type the caller's complaint into two 3270 terminals hooked to a System/ 370 Model 135.

The computer processes duplicate notices. One copy is immediately sent to the appropriate city department, and the other—which gives a date when the repair should be completed—is mailed to the caller. The file remains open until the work is done, after which the caller receives a completion notice.

The Yonkers system was based on one used in Garland, Texas. "Before it was put into use," City Manager Pat T. Ravo, says, "citizens' complaints were frequently lost or shuffled from one department to another. Now, to the public's delight, some 200 calls a day are handled routinely."

Word of the Action Center's effectiveness has spread beyond Yonkers. One dispatcher got a call from somebody who heard about it on the radio and wanted a pothole repaired. "The only trouble was the man was calling from Newark, N.J.," the dispatcher says.

Her eye is on the satellite

T-minus three . . . two . . . one . . . liftoff! Watching the newest U.S. earth resources satellite (Landsat) soar into space was a moment Barbara Williams, a program manager with the General Business Group/International, won't soon forget.

She managed the cost/benefit justification for the current Landsat program while on temporary assignment with the National Aeronautics and Space Administration as a member of the Presidential Executive Exchange Program. In recognition of her work, she had been selected as the keynote speaker at the launch ceremony.

The satellite, launched from Vandenberg Air Force Base in California, is in a 500-mile-high orbit circling the earth 14 times a day, collecting and sending data back to stations in the U.S., Canada, Brazil, Italy and Iran. (Seven more nations will be added in the future.) Five IBM System/370 Model 158s process the information that Landsat discovers.

Currently, Landsat is looking for oil, investigating faults in the earth's surface and making vegetation and environmental studies.

"The uses of Landsat data," says Williams, "are limited only by the imagination. It has changed the way we perceive the world."

No slack time

First it was ice cream and apple pie. Now, blue jeans are as good a symbol of the American way of life as any. Levi Strauss and Company, known for jeans, is one of the world's largest suppliers of other sportswear as well.

With demand running second only to good fit, there's no recouping sales lost for out-of-stock items. The Strauss Sportswear Division's goal is to ship every order within 24 hours of receiving it. An IBM System/ 370 Model 145 makes this a reality by keeping a digital image of all storage space in the Sportswear Division's distribution center at Little Rock, Arkansas, and maintaining a record of each location's inventory.

When garments are received from the factory, labels are read by a laser scanner and assigned by a computer to a storage location.

The computer stores the dimensions of folded garments and figures out the best fit in packing cartons. Only packing the shipments is a manual operation. Each package is sealed automatically, and a laser scanner reads the label and diverts the package to the right conveyor. As many as 180,000 garments a day are sent on their way.

"The payoff is service," says James Benson, national distribution manager of the Sportswear Division.

Three keys to picking a jury

As old-fashioned as pulling names from a worn wooden box, and as up-to-date as a computer program—that's the way jurors are picked in Marion County, Ind.

In the best two-party tradition, two commissioners (a Democrat and a Republican) together press a button to activate the computer program. The computer responds with a list of random numbers that correlate to names on the county's voter registration list; the monthly total runs from 4,000 to 6,000. The numbers produced depend on the exact time of day the button is pushed. A split second sooner—or later—would produce a totally different set. (No one who has served on a jury in the past year is included.)

Names are placed in the jury selection box. Each commissioner has a key to the triple-locked box, and both must be there whenever it's opened. A third key is held by an official of the Marin County clerk's office, who must also be present when the box is opened.

It's a fair-and-square method, says Circuit Court Judge J. Patrick Endsley, "because every active citizen has the same chance of being selected for duty and, in the eyes of the law, that means our juries fairly represent the community."

In Boston, a cast of thousands

It was a record field of 4,212 runners who finished in this year's Boston Marathon. And among them were at least 15 IBM employees.

Fred Bostrom from Owego and Bill Warner from Kingston completed the 26-mile, 385-yard race in under three hours.

Others, who finished in three hours plus, were: Earl Wunderli from Armonk; Jim Smith, Bob Briggs, Bob Rother, Pete Sanfilippo and Erik Borchsenius from Poughkeepsie; Bob Schnell and Marshall Childs from Kingston; Chuck Van de Zande from East Fishkill; Alan Jones and Dave Heck from Endicott; and John Iverson and Bob Kaplan from Harrison.

Winner Bill Rodgers ran the second fastest Boston Marathon ever in 2 hours, 10 minutes, 13 seconds—only 18 seconds slower than his own record run in 1975.

Computer clues in Norfolk police

If Sherlock Holmes were a detective in the Tidewater area of Virginia today, he would be using a computer, not a magnifying glass to search for clues.

Police in nine area communities enter, store and use information in the city of Norfolk's IBM System/370. The system gives the departments information on fingerprint files of habitual offenders, lists of stolen goods and outstanding warrants.

From computer terminals, police can search the computer's memory or obtain information stored in the Virginia Crime Information Network computer in Richmond or at the National Crime Information Center in Washington, D. C.

The computerized fingerprint identification system enables Norfolk detectives to zero in on criminals, using information once thought insufficient to identify suspects. Even if one print is found at a crime, it can be coded and the computer files searched for a match.

The Norfolk computer also stores lists of aliases. Given one name used by a suspect, detectives can search the alias file for the real identity.

Putting firehouses in their place

At the turn of the century, someone figured out that a horse pulling a fire wagon could run 10 blocks. So cities located fire stations 20 blocks apart, each station covering half the distance to the next.

Today, many communities are using computers to locate fire stations and to improve other fire-fighting techniques.

Wichita, Kan., is using a System/370 Model 155 to relocate and build new fire stations based on an analysis of population growth, road networks, fire records, and the theory that no station should be more than four minutes from a potential fire.

The plan, which has saved nearly $3 million in construction and operating costs, also uses the computer to reduce the number of fire inspection teams. Teams now concentrate on areas where 70 percent of the fires occur in the Wichita area.

The system also maintains a list of some 400 invalids confined to their homes, so that firefighters en route to a fire can be notified if an invalid is in the building; and it helps the fire department determine what equipment to send to a fire based on a description of the neighborhood stored in the computer.

BLUEGRASS
IBM's Old Kentucky Home

by Harrison Kinney

On the evening of last March 27, the University of Kentucky's veteran basketball team won the national championship in a lively shoot-out with Duke University's Blue Devils. The city of Lexington, Kentucky, home of the University's principal campus, followed the game on television, and celebrated the results most of the night. So many of the school's 22,000 students jammed the Bluegrass airport to await the return of the team, the new terminal was unable to contain all of them.

At IBM's Office Products Division's large lab/plant site on the north edge of town, the morning after, the victory was still the topic of joyous conversation at the coffee machines. For after nearly 22 years, during which the site population has grown from 300 to 6,700, and the metropolitan area has nearly tripled to 225,000, the involvement of IBM's people with the achievements and institutions of the area in which they live and work is total and irreversible.

"There was the usual apprehension down here when we heard IBM was moving in," said William Hanna, associate editor and editorial writer for the Lexington *Leader*, the city's afternoon newspaper. "A lot of people thought of smoke-belching industry coming in to threaten all the Bluegrass traditions and bucolic way of life. Here were 300 to 400 IBM families moving down from the Mid-Hudson Valley, crowding the schools and raising labor rates the farmers here would have to meet."

He consulted yellowed newspaper clippings from the *Leader* going back to the spring of 1956. "When the Common-wealth of Kentucky sold IBM 184 acres of land belonging to the Eastern State Hospital Farm," Hanna went on, "a lot of people got the idea it was being given free. IBM, of course, paid top dollar for every acre. Governor Happy Chandler *was* eager to get IBM into the state to get that land on the tax rolls and provide jobs here, but nothing was given away.

"When IBM did get here, generally speaking, it was love at first sight, on both sides. More than a thousand local people were hired the first year, and IBM quickly attracted vendors and other businesses who moved in and followed IBM's example of good corporate citizenry.

"Sure, labor rates went up. But so did the value of the land. Sure, our schools became even more crowded. But schools were crowded everywhere because of the postwar baby boom. IBM's local taxes and their people's property taxes soon helped us straighten out that situation."

Hanna held up a small clipping for illustration. "We all did our best to show our appreciation," he said. "We'd get an IBM press release about somebody in Kingston being promoted, and we'd run the item in our paper, even though maybe no more than a dozen IBM people here

IBM Lexington's newest product, the Electronic Typewriter, is tested for susceptibility to electrical "noise," similar to that generated by FM or TV stations, simulated in this chamber. Tests also make sure the typewriter doesn't interfere with appliances, such as a radio in a customer's office. Ted Lassetter, left, general manager, watches measurements with Donald Bush, department manager.
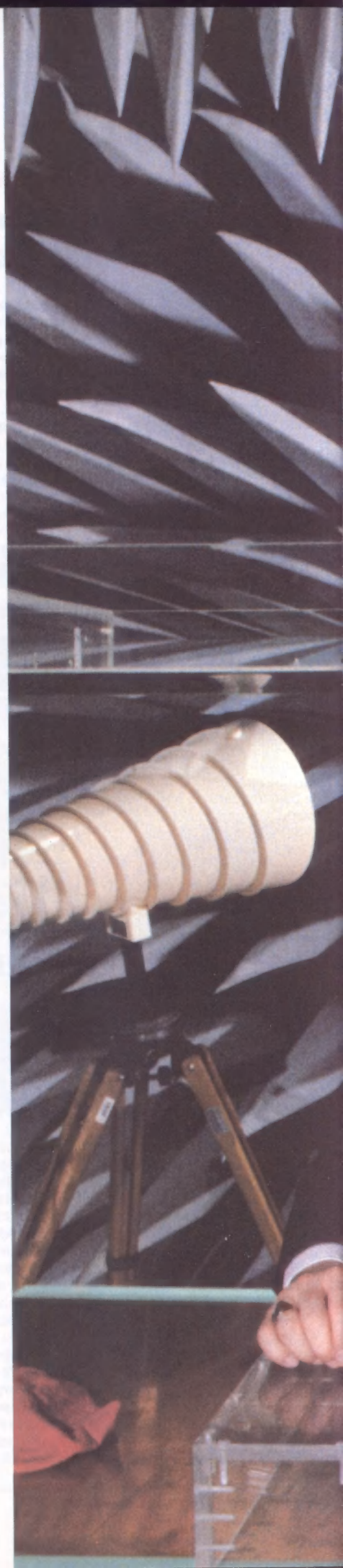
Gerald and Carlene Gregory

The Lexington area contains many individualistic houses from postbellum days. This example of Italianate architecture in Georgetown, 12 miles from Lexington, was built in 1877 by a wealthy grower of hemp and tobacco. It's now owned by Gerald and Carlene Gregory, who are native to the area and were high school sweethearts. They are redecorating all 25 rooms, which provide ample living space for two children, a grandfather and great aunt. Jerry is a manufacturing engineer at the IBM plant.

had heard of the guy.''

The most receptive to IBM's coming had been Lexington's business community. Indeed, it had had the welcome mat laid out for at least 73 years. A booklet by a local historian, G. W. Ranck, authorized by the newly organized Lexington Chamber of Commerce in 1883, issued this plea:

"Experience has plainly demonstrated that interior towns [Lexington is not on a navigable river] must look to something else than mercantile business to give them growth and prosperity. It is by manufacturing enterprises that such towns succeed, and Lexington realizes the fact. She wants pushing, experienced, enterprising manufacturers, regardlesss of where they come from, or to what school of politics they belong, if they are willing

to help us build this town.''

The town, in 1883, had only a population of 20,000, and it had no more than tripled by the time IBM arrived. The student bodies of the U. of K. and Transylvania University, where Henry Clay taught law and Jefferson Davis studied, together totaled only 10,000 students in 1956.

For decades there was little or no response to the Chamber's overture. Lexington remained the center of the rural Bluegrass Region, the world's largest auction market of burley tobacco. And the world's leader in breeding and selling 15 kinds of fine horses, including the famous thoroughbreds that traditionally win at the leading racetracks in America.

The land continues to favor tobacco and livestock. The thick grass ("Why our rich green grass is called 'blue' when it never is blue, is one of the unsolved problems,'' Ranck wrote in 1883) remains green most of the year, providing winter pasturage as well as summer. Presumably, the soil and water contain limestone from shell deposits laid down when the area was an ocean floor millions of years ago. This provides the phosphorus and calcium good for the light, solid bones, elastic muscles and strong tendons that add up to champion racehorses.

Horse breeding, in turn, bred most of the Kentucky traditions now largely passé: white-maned Kentucky colonels, with string ties, drinking local bourbon whiskey in mint juleps on porticos of antebellum mansions. Today, breeding, selling and racing horses is a serious, billion-dollar industry that pays the State annual income taxes of $15 million and more. Brood mares from all over the world are shipped to Lexington for mating with champion stallions worth millions of dollars and whose stud fees are frequently $50,000.

Operating costs are making obsolete other traditions as well. The pristine white fences and barns on the larger horse farms may cost $100,000 each year to keep painted. Today a less expensive chemical treatment of the wood is often used, turning fences and barns brown or black, as if the landscape were gradually going into mourning. But the

industry is literally a gamble, and if it's costs versus tradition, tradition goes.

Why did IBM decide to make this quiet college town, this tranquil land of farms and horses, into what soon would become the world center of electric typewriters?

"Nobody thought our typewriter business would grow as fast as it began to with the Model B," says William Mac-Michael, one of the engineers assigned to scour the nation for a growth site for the newly formed Electric Typewriter Division, in 1955. "Typewriters had outgrown Rochester, N.Y., and Poughkeepsie, and now the plant they shared with the Military Products Division in Kingston was getting crowded.

"We knew that to persuade the skilled people we needed to set up shop elsewhere to move, we'd have to find a place where they and their families would enjoy living. There was never a close second to Lexington as a choice. Mild climate.

Two first-rate universities. Synagogues and churches of all denominations. Fine park systems, bass fishing, and lakes for boating. Horses. Golf courses. Art, music, theater and lectures of a quality that not every college town has.

"Though there were visible signs of segregation throughout the community back then, there wasn't the hate and fear you found in racial situations elsewhere. All Lexington needed, it seems, was somebody to set the example.

"Lexington put us closer to our suppliers, too. We were buying our motors, castings and covers from the Midwest. And our mass production made it sensible to be located closer to the center of population, rather than in the Hudson Valley, for distribution purposes."

Though the site is only 21 years old, and most of its population is of Bluegrass origin, the local IBM Quarter Century Club, with 230 members, counting retirees, reflects the early infusion of vet-

Akira Mishima & Family

The always changing international community in Lexington grew through both the University and worldwide demand for local IBM products. Nonnatives seem to survive the cultural collision nicely. Akira Mishima, in Office Products product planning, is on a two-year assignment from IBM Japan. He, his wife, Chiko, and their three children have become as fond of fast-food restaurants as most American families. "You take up local customs without thinking," says "Aky". "In Japan, I would not be the one serving in this picture. Or wearing such a hat."

David Duncan, Jr.

As superintendent of manufacturing services, second and third shifts, David Duncan, Jr., has much of the day to plough pastureland on his 35-acre farm outside Lexington, preparatory to planting tobacco. He runs a small herd of cattle, a few horses, and is remodeling his home. He and his wife DeMaris, a nurse, are active in civic affairs.

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eran skills from elsewhere.

The plant was initially designed to build 1,000 typewriters a day, but the 1957 recession created a snag and, for a time, production was only half of what it had been in Kingston. Then the location found its stride that has only rarely been broken since.

The first typewriter rolled off the line in December, five months after ground was broken. The millionth typewriter, produced in 1958, came 25 long years after the company purchased the Electromatic Typewriters, Inc. in 1933. By contrast, IBM's *second* millionth typewriter was automatically packaged for shipping just five years after the first.

IBM Lexington, its acreage now up to 348, has seeded two other Office Products manufacturing locations (Austin: magnetic keyboard and dictation equipment, and Boulder: copiers). Still, demands for Lexington's typewriters—especially the Correcting Selectric model—ink jet printers, copiers and supplies (Lexington makes three million miles of typewriter ribbon a year) are keeping round-the-clock shifts working hard to meet the huge backlog of orders.

Abnormal weather patterns have not helped. Last winter was the worst in Lexington's history. Kentucky farm losses ran to $194 million, much of it for feed and labor needed for livestock deprived by the snow of winter pasturage. Ice and snow on the roads also shut down the IBM site for four days in January.

"I found that unacceptable," says Terrell "Ted" Lassetter, the site general manager. "That's as many closings for

snow as we'd had in all the previous 20 years. The roads were left impassable too long. Lexington wasn't equipped to handle that much snow."

The mayor was also concerned and promptly appointed Lassetter chairman of a snow removal committee. Lassetter, just as promptly, set up two subcommittees. One is studying capital requirements for the purchase of more snow removal equipment for the metropolitan area. The other is analyzing ways to get vehicles off the streets for faster snow removal.

Time and again the plant has found itself running hard to keep up with the demands for the products that its own innovative laboratory force creates.

When, for example, that spectacular addition to IBM's typewriter family, the Selectric, was announced July 31, 1961, the plan had been to build only 13,000 of them over the next five months. During announcement day and the day following, 20,000 orders were taken.

The bustling Lexington plant measures up as one of the principal local tourist attractions. More than 3,000 people toured the plant last year, and the tours continue to hold their own against such historical competition as Henry Clay's home, Daniel Boone's grave, the bourbon distilleries, Man O' War's statue, visits to the thoroughbred horse farms, and the childhood home of Mary Todd, President Lincoln's wife.

The site operations, to be sure, are a collection of eye-opening superlatives. They cover 51 acres, a climate-controlled farm of sorts, with more roofed acreage than any other IBM location. There is more close-tolerance machining there, too, including the production of ink jet nozzles with apertures one-third the thickness of a human hair.

Copier lenses must be aligned so perfectly that they are measured by lasers. A huge punch press rests on a concrete base 16 feet thick, and presses metal at a pressure of 600 tons per square inch. The machine floor handles more than eight million parts a day, and the largest automated warehouse in IBM is nearing completion elsewhere on the site.

John and Branislava Zbrozek

Branislava ("Branka") and John Zbrozek, senior associate engineers, enjoy the inner court of the development lab during lunchtime. Branka, who came from Yugoslavia 10 years ago, met John at Wayne State University in Detroit. Branka is in logic design; John, in integrated memory design.

Patricia Stipp

The University of Kentucky's principal campus, in Lexington, provides cultural and sporting activities as well as education. Many children of IBM families are among its 22,000 enrollment, and many IBM employees take classes part-time, such as Patricia Stipp, shown here in front of U. of K. library. Recently a nurse at the IBM plant, Patricia has been promoted to a cafeteria manager. She is studying for a B.S. in management under IBM's Tuition Refund Plan. Her husband, George, is in product analysis at the plant.

Signs overlooking the vast working spaces remind the workers that "Today's Quality is Tomorrow's Reputation."

"These people bring to their work the same pride they take in their homes and communities," Lassetter says. "Most of them literally have their roots in this region. I'd guess up to 30 percent work farms, and some commute 40 to 50 miles rather than leave the old homestead or the town where they grew up.

"A lot of farmers having trouble keeping their land have joined us over the years and used their pay to keep the farm going. A good number of them are town officials where they live. There are always those taking early retirement to get back to their corn, tobacco, cows and horses. They grew up with the work ethic. We were a good match for one another from the start."

Lassetter grew up with the work ethic, too, in western Tennessee. He joined IBM in 1953 as an engineering graduate of the University of Tennessee. He was moved to Lexington in 1957 as a young project engineer in the old lab (a large new lab has been built and occupied since). When data processing manufacturing facilities were being established in IBM's World Trade countries, Lassetter was among those sent abroad to help.

"I was gone 12 years and never expected to get back here," he says, "but I'd be perfectly happy to end my IBM career here, as long as I'm doing the job to my satisfaction."

Among the surprises to Lassetter upon his return to Lexington last fall were the extensive transformation of fields into housing, the University's new facilities, and the face changes of downtown Lexington through the construction of the Civic Center, a huge hotel, a striking new bank building, and other structures.

Other things had changed too. Housing costs had tripled. By 1977, the average price of housing in Lexington was $44,000, according to a leading local real estate broker. This year, houses are selling for an average of $48,300.

This particular broker handles an average of 200 IBM home transactions each

Tom Victor and Tom, Jr.

Tom Victor, from Newburgh, N.Y., knew nothing about farms or livestock when he transferred to Lexington from the Mid-Hudson Valley in 1957. Then he

invested in a farm and a racehorse that won several stakes. Today, he and his wife, Joyce, preside over 66 acres of farm and 15 valuable horses. Tom, Jr.,

right, earns his living shoeing horses. Tom, Sr., is a project manager in word processing at the IBM plant, eight miles away.

Where's Bill

To a hospital to
show the company's
new blood cell
processor. He's a
'blood man' with
Information
Records.

Macnamara off to in that fancy rig?

by Martin J. Hamer

It was 5:30 A.M. in Newport, Rhode Island, that small town on the Eastern seaboard best known for its America's Cup Races and its turn-of-the-century, Versailles-like summer "cottages." In a car wash on the deserted main street, Bill Macnamara, Jr., a staff associate with the Information Records Division, was busy hosing down a motor home.

His exertions caught the interest—and the suspicion—of a policeman on his rounds. Macnamara explained that he was a biomedical salesman with IBM getting ready for an early-morning hospital demonstration. Then he pointed out the blood cell processors inside the van.

Since seeing is still believing (especially at that hour), Macnamara proceeded to demonstrate the machines for the policeman. The soft whir of the blood cell processor could scarcely be heard above the sharp tinkling of sailboat halyards in the marina. When Macnamara was done, the officer shook his head in wonderment—then bought him a cup of coffee.

This kind of happening is not uncommon for Bill Macnamara. "The van itself is an attention-getter," he says. "Then, when people find out what's inside, they're hooked on knowing more." IRD bought two of the motor homes a year ago (at a cost of $29,500 each) to demonstrate the two models of the blood cell processor.

The machines were IBM's first tap on the door of medical technology, and IRD was looking for a way to swing that door open. To the people in marketing, taking to the road was a must. "This way," says Macnamara, "we can go to

'At first, when I'd walk into a hospital, they'd say, "We don't need any typewriters."'

small outlying hospitals and blood banks that otherwise might never consider—much less see—the machines." Previously, the only demonstrations were at a nearby blood bank or hospital or at medical equipment exhibitions.

Blood cell processors have emerged from a medical breakthrough that enables blood to be frozen and stored. Pioneered in England in 1950, the technique involves separating the blood's red cells from such other components as white cells and plasma, then adding glycerol to prevent damage to the cells during freezing.

But the glycerol had to be removed manually after the blood was thawed, which was so expensive and time-consuming that little use was made of the discovery. Then the cell-washing machines came on the scene. The IBM 2991 processor was developed in 1972 by a biomedical group, then part of the System Products Division, as a result of the research of George Judson, now a retired IBM Fellow, who developed a machine to separate blood.

At that time, refrigerated whole blood (blood with all its components) was still the accepted standard for transfusions. But whole blood creates a number of problems. Demand can outrun supply; the blood is good for only 21 days; and, as it ages, it develops microaggregates that can cause adverse reactions.

Moreover, doctors were beginning to realize that many patients requiring transfusions did not *need* whole blood. All they needed was the oxygen supplied by red cells. Research indicated that washing blood lessened the chances of allergic reactions and fevers. As this realization grew, so did the sales of blood processors. Then, in 1976, IBM introduced another model of the 2991.

The following year, the machines were set up in their motor homes. Each of the 26-foot-long, 8-foot-wide vehicles has two beds, a kitchen and a lavatory. Behind the front seats is an open area not unlike a foyer. Behind it, on the carpeted floor, one processor stands where the

dining table used to be; the other has supplanted a built-in lounge.

When Macnamara sets up shop in a hospital or blood bank parking lot, his van is soon crowded with administrators, doctors and technicians. "The head man and woman usually grab the seats on the driver's platform that swivel 180 degrees," he says. And there is invariably some raillery, like: "Boy, when you people at IBM do something, you really do it big."

Macnamara gets their attention by explaining that he can wash a unit of blood from the hospital and remove the unwanted components while recovering most of the red cells. Then he proceeds to do just that. There are no instant sales for a machine costing between $10,000 and $17,000, but, by the time he drives off, the process is well in motion.

His territory covers the northeast, from Maine to Delaware. (The other motor home is stationed west of the Mississippi.) For four months a year, he is on the road four or five days a week, sleeping in motels and vacuuming and washing his vehicle every day. The rest of the year, the traveling is done by IRD biomedical reps Tim Bowling and Michael Gold, who sell processors down south.

Bill Macnamara joined IBM in 1966 after serving in Vietnam as a pilot with the U.S. Navy Air Force. His first job was selling IRD supplies—punched cards, paper forms, magnetic tape—to brokerage houses, insurance companies and the stock exchange. Eventually, he became national manager of the Bell System account. Then he was asked if he'd like to sell the blood cell processors.

"It was rough going at first," he remembers. "I'd walk into a hospital and say, 'Hi, I'm from IBM.' And the doctor would say, 'Fine, but we don't need any typewriters.' Then I'd tell him why I was there, and he'd ask a million questions."

Macnamara spent six months in the Boston area, learning how blood is collected, stored and frozen at the U.S. Naval Blood Research Laboratory in Chelsea, Mass. He got the feel of a blood bank operation by stopping by evenings at a Red Cross center.

"The field is still so new," he says, "that you can still run into strange situations." Like last year during a visit to a hospital in the northeast. Some of a patient's blood, which had been drawn and frozen a month before, was being prepared for an operation half an hour away. Instead of separating smoothly from the glycerol, the red cells were clotting.

A second batch was processed. Same results. Then he called Dr. C. R. Valeri, his mentor at the U.S. Naval Blood Research Laboratory. Dr. Valeri fired questions at him. ("It was like going through a cockpit check.") Within minutes, they had hit on the probable trouble. Macnamara relayed their findings to the hematologist, who tested the blood for signs of a sickle-cell trait. Sickle-cell anemia is an inherited and crippling blood disease. The test was positive, and the hospital informed the patient.

The IRD biomedical group has spurred the use of small units of frozen red cells for children. Once the seal is broken on a one-pint plastic storage bag, all the blood must be used or thrown away. Because the 2291 (Model I) can wash small units of blood, many hospitals now freeze "pediatric" units to avoid waste.

Another application is the washing of blood left in heart-lung machines after open-heart surgery. This allows retrieval of red cells that would normally be discarded with the whole blood.

By June, IBM's new blood cell separator will be ready for the road. It will enable doctors to isolate whatever component is needed from a donor's blood as it is being drawn, while returning the other components to the donor.

All of this is immensely pleasing to Bill Macnamara. "The more people who can see these machines, the better I like it," he says. He has demonstrated at health fairs, fire departments, Lions and Elks clubs—"once even in a shopping center where I met a couple of doctors."

He's even done his act at his 13-year-old son's school in Freehold, N.J. "The kids call me the blood man," he says.

"It's not a bad title." □

What the stockholders were interested in at the annual meeting

The annual meeting is the occasion when the modern corporation puts itself most directly on-line to one of its most important publics—its stockholders. This year's IBM stockholders meeting held at Denver on April 24 proved no exception. The 1,508 stockholders present had a chance to question, and sometimes challenge, management decisions and get immediate answers from the top of the business. Here is a selection of their questions and responses from IBM Chairman Frank T. Cary.

What is the effect on IBM operations in India as a result of our leaving that country?

We have had an operation in India for many years. It had very capable people. It was profitable. However, because of unacceptable conditions established by the Indian government, we have been closing down our operations. We soon will have separated nearly all of our people, and in many instances we have found jobs there for them. We have closed our plant and sold our service bureau, and most of our former equipment service people have moved over to the government monopoly created to service all manufacturers' computers. We were very disappointed, because we would have much preferred to harmonize our operation in India, as we did in Indonesia, where we changed our operation to an agency mode. If the Indian government approves, we will maintain a liaison sales office, through which Indian customers who can get licenses to import will be able to buy our products.

Can you comment on operations of your Satellite Business Systems and how meaningful they are to IBM?

Satellite Business Systems is a partnership formed by The Aetna Casualty & Surety Company, COMSAT General Corporation, and IBM. SBS is moving ahead with plans to put up a "bird" in 1981 and to offer a service that I think will be very attractive to large corporations and government agencies that are spread out over the country. By lowering communi-

cation costs, SBS and others are going to create a much larger market—not only for transmission of data but for the processing of data as well.

Can you comment on IBM's equal opportunity program in South Africa and the support we offer people who need economic help?

We have 231 non-white employees in South Africa, including 167 blacks, out of a total of 1,427 employees. Job opportunities are made available to all races. We have equal pay for equal work. In addition to all the benefits given to whites that include paid vacations, loan programs and so on, we have some special benefits for blacks in the form of tuition loans, 100% medical and hospital reimbursements, and a home loan program. We have 19 black employees who oc-

cupy homes built with such loans, and 33 additional homes are in process. In 1977, we made $245,000 in contributions in South Africa, of which $175,000 went to black beneficiaries. (A more detailed report on IBM's operations in South Africa is available on request from the IBM Stockholder Relations Department, 717 Fifth Avenue, New York, N.Y. 10022.)

With the decrease in prices of electronic chips, there is a great potential in the home-computer business. Does IBM have any plans to explore this market?

We are very cognizant of lower technology costs and have incorporated them in our systems. We are very interested in the home-computer market.

Can you comment on IBM's future in the small-computer market, where other firms have had an astonishing rise?

Our small computers—including the IBM System/3, System/32, System/34, Series 1, 5100 and 5110—are all doing very well or have done so. We think the small systems marketplace is very large, not only from the standpoint of lower cost and increased performance for the smaller enterprise, but also from the standpoint of using smaller systems in networks to distribute data processing in large enterprises. We think small computers have a fantastic future. We have a great deal of competition in this area, and I wish the Department of Justice would recognize it as well as others do.

How does IBM plan to manage retail marketing of products through stores?

We have established in our General Systems Division 22 business computer centers in which we market the new IBM 5110 computer, and we use various means of advertising to get prospects to come to those locations. We have been very successful with this approach. Whenever this seems to be the low-cost and efficient way to go to market, we will use it. □

POP
came the competition

What the FTC found when they went looking for monopoly in office typewriters.

by Geoffrey D. Austrian

No one quarrels with good news—least of all when it entails the dropping of a major investigation such as the Federal Trade Commission's two-year monopoly study of IBM's office typewriter business. But the brevity of the Commission's early February announcement that "no further action is warranted . . . at this time" left many people in IBM, and elsewhere, curious to learn the full reasoning behind the agency's decision.

Now, FTC documents recently made available under the Freedom of Information Act disclose the Commission's overall findings as well as the nature of complaints garnered from IBM's competitors.

Far from a monopoly situation, growth in the word processing industry was found to be "explosive," according to a closing memorandum to the Commission from William J. Murphy, attorney of the Commission's Bureau of Competition. In the memorandum, dated January 16, the attorney for the investigative arm of the agency commented: "In the word processing field, technological developments in electronic data processing, low-cost circuitry, and reliable input/output devices (whether hardcopy printers or visual displays such as CRT and gas plasma) have led to an explosion in the number of word processing devices available to the customer."

Prices range from $2,500 to $70,000, the attorney observed in a footnote. The devices "can be as simple as a cassette memory unit attached to a modified typewriter, or as complicated as a multi-station, video display, floppy disk memory system."

"Numerous companies," Murphy continued in the body of the memo, "have entered the marketplace with a variety of devices widely ranging in price and function. As of this date, [the FTC] staff has identified no fewer than 50 companies offering equipment specifically designed for word processing."

The word processing industry is not only characterized as large and growing —but as one that is relatively easy to enter. "In 1977, 10 new companies entered the market," Murphy reported. Of the companies included in what is called a "total universe figure for 1976," five, according to the FTC document, entered the field in the latter part of the year. "Of 15 recent entrants," the attorney added, "some are major companies . . . such as Addressograph-Multigraph, Dennison Manufacturing, A. B. Dick, Digital Equipment, and Philips (Norelco)."

In describing the typewriter market, Murphy points out that IBM was the sole manufacturer of a single element typewriter from 1961 (when the Selectric was introduced) to 1974. "But the success of the Selectric idea," he commented, "has fostered new competition."

"In 1975," he said, "five new single element machines were introduced, and last year (1976), two additional manufacturers began offering single elements." Citing a previous FTC investigation of another company in which it was claimed that IBM had established a "patent barrier" around the manufacture of the single element typewriter, the attorney commented: "The companies making these allegations were asked during the course of the investigation to submit supporting evidence of this practice. None were able to do so."

Not only have other companies been able to come up with single element typewriters, "but there is increasing speculation," Murphy commented, "that daisy wheel stand-alone typewriters (with or without text manipulation capabilities) will soon enter into direct competition." (In contrast to the Selectric element, in which characters are located on the surface of a ball, the daisy wheel, manufactured by Qume and Diablo, is flat, with characters located at the ends of "daisy petals" that radiate from the center.)

The picture that emerges from the report is one of intense competition in marketing and product development. "Paradoxically," the attorney reported in a footnote, "while some IBM competitors complained about IBM's full line of products, others stated that the limited number of different IBM products indicated IBM's monopoly power, in that IBM need not be innovative." From 1968 through 1977, the IBM Office Products Division has announced 23 major products.

During the investigation, the FTC sent letters of inquiry to each of the 50 companies it identified as offering equipment in the word processing field. The letters sought data on products, sales, costs, patents and licenses. In addition, "each company's complaints or comments regarding IBM's activities in the market were solicited." Apparently, IBM's competitors provided only a partial response to the request. Of the 50 companies contacted, the Commission reported that "20 failed in whole or in part to respond to the initial letter of inquiry or to subsequent requests for the data."

During the past two years, Office Products Division Counsel Robert J. Bennett met several times with members of the investigating staff. In addition, a number of documents, including trade press articles describing technical innovation and new entrants to the industry, were

of them for review and recommendation. If the Commission decides that the filing of a complaint is called for, the matter is either settled by a consent decree or litigated before an administrative law judge, who reports his findings and recommended decision to the Commission. The Commission's final decision can then be appealed to a U.S. Court of Appeals.

"Fortunately, we didn't have to go through all that," says Bennett. "We cooperated fully. We were responsive. At the conclusion, they were apparently satisfied that IBM's success was not due to any unfair trade practices or to a monopoly position."

Although the investigation of IBM began in January 1976, the government documents disclose that the Commission had been scrutinizing IBM's typewriter business for sometime. A preliminary investigation, made part of the recent investigation, was started in December 1968. The recent investigation was budgeted in August 1975.

At the start of the just-concluded investigation, the Commission took a look at its own automatic typewriter inventory. As of June 1975, 56 percent of its rental payments for automatic typewriters went to IBM. Among the IBM typewriters in use were one Memory and 14 Magnetic Card typewriters in the General Counsel's Office, and one Magnetic Tape and eight Magnetic Card typewriters in the Bureau of Competition.

A final note for history buffs: "IBM's involvement [with electric typewriters]," the Commission's Bureau of Economics determined in 1970, "stems from the efforts in 1914 of one James Smathers of Kansas City to develop an electric typewriter. The Smathers machine was allegedly offered to, but refused by, both Royal and Remington." Smathers's business ultimately became Electromatic Typewriters, Inc., acquired by IBM in 1933. □

furnished to the Commission.

"The most striking thing," says Bennett, "was the number of companies that had come into the business in the past four or five years."

In an FTC investigation, the staff attorney's recommendation generally goes to the agency's Bureau of Economics, which may or may not agree with his conclusions. Then it is forwarded by the Bureau of Competition to the five commissioners and usually assigned to one

High adventure, for women only

Why would ten
women—two from
San Jose—want to
take on one of the
most savage peaks
in the world?

They beggar description. No avalanche
of words, or even photographs, can do
justice to the Himalayas. Only being

there can. And that is why Vera Watson
and Irene Miller are going.

This fall, the two women, both members of the San Jose Research Laboratory, will take on the mighty mountains—specifically, Annapurna, the world's tenth
highest peak. They will be part of the ten-woman team that is the first American
expedition of its kind to the Himalayas, as
well as the first American expedition to
Annapurna.

At 26,502 feet, Annapurna stands tall
in the Nepal range of the Himalayas. This
is the gathering ground for the highest
mountains in the world—eight peaks
above 26,240 feet and twenty above
24,600. Annapurna—there is also an

Annapurna II, a mere hundred feet smaller—was the first of them to be conquered, by Maurice Herzog and his French Himalayan Expedition in 1950.

Since Herzog's feat *(see box)* Annapurna has been scaled only three times: by the British in 1970, a British-Nepalese team that same year, and a Dutch team last fall.

Now Vera Watson and Irene Miller will try.

Mrs. Watson, a programmer at San Jose, began climbing 16 years ago when a friend invited her along on some weekend mountaineering. "Halfway up," she remembers, "I started thinking, 'Oh, God, please help me.' Then I made it. I felt proud, and I was hooked."

Mrs. Miller, a physicist, was a student in college when she started to climb. She read a newspaper ad for a hiking club, joined it and was on her way.

Through the years, both advanced from rock climbing to mountaineering Each time out, they tried to get smarter and tougher. On vacations and leaves, they have climbed (though never together until now) hundreds of mountains in South and North America, Asia and Russia—some as high as 23,000 feet. In 1961, Mrs. Miller camped 19,000 feet up in the Himalayas with a scientific expedition.

There have been some bad moments. Vera Watson had one in the Andes in 1974: "I tried to reach the summit of a mountain alone, after the others I was with had given up. It took me five days to get down, and all through it, I thought I was going to die. I decided then that I'd never climb a mountain just because it's high or there. I'll only climb it if there's something appealing about it.

"A great peak like Annapurna," she adds, "is every climber's dream."

Irene Miller also remembers Peru. She was crossing a steep ice slope with steps cut in it, holding onto a fixed rope, when she slipped. "I had on a full pack, and

With temperatures
that drop to 36°
below at night,
Annapurna tests
its trespassers.

there was nothing between me and an absolute drop-off but that rope, which was stretching. The people above and below me couldn't get to me. I had to struggle up myself. I was pretty frightened—but things like that don't stop you from climbing."

"There's an indescribable feeling you get at a summit," she explains. "You look around and say, 'This is unbelievable, and nobody else can share it.' That's why climbers like to take so many photographs."

Every member of next fall's expedition is a veteran climber. The women's ages range from 20 to 49, and most of them are professionals in either science or medicine. The leader, Arlene Blum, is a senior research fellow at the University of California at Berkeley and was a member of the Bicentennial Expedition to Everest. She climbed to within 5,000 feet of the peak before dysentery forced her back. But it was close enough to convince her that the time had come for an American woman to scale a major peak.

"If we climb Annapurna," says Vera Watson, "it will help other women climbers. They'll have an easier time getting invited on expeditions or organizing their own."

The expedition will assemble in Katmandu, Nepal, in August. From there, with the help of porters, they will carry some two tons of food and one ton of equipment through the Nepalese highlands to a base camp at 14,000 feet. When the summer monsoon ends in September, they will be ready to establish five other camps on the mountain. This will take anywhere from five to six weeks —including many nights when the temperature falls to 36 below and anything that might freeze—from drinking water and cooking gas to boots—must be bundled into sleeping bags.

It is from the last camp that at least two of the women will make their dash for the summit. They will attack it by the northeast buttress of the mountain—a less dangerous but more difficult approach than Herzog's.

"If things go right," says Vera Watson, "more than one team will get to try for the summit. The climbing leader, who'll be chosen later, will make that decision. It will have to do with who is most physically fit at that altitude. Even though we plan to use oxygen—which is an advantage that Herzog didn't have—everyone will acclimatize differently."

By Himalayan expedition standards, this one will be relatively low-cost: an estimated $80,000 in all. These are fundraising months, and donations are being sought from businesses and individuals. Thus far, money has come from the *National Geographic* and individual sponsors.

Fund-raising is important, but nothing takes a back seat to training. Irene Miller runs, plays soccer and lifts weights. Vera Watson also lifts weights, swims and sprints up and down a thousand-foot hill. They, like the others, know that strength is vital but stamina even more so in mountaineering.

Meanwhile, Annapurna waits. And even as it waits, it is growing. Each year, the movement of the earth that 100 million years ago brought the Himalayas up out of the waters between India and present-day Tibet continues. And each year, the great mountains nudge as many as 10 centimeters nearer the sky. ☐

First on top, but at a steep price

"The summit was a corniced crest of ice, and the precipices on the far side which plunged vertically down beneath us were terrifying, unfathomable . . . Never had I seen a mountain so impressive in all its proportions."

Nor had anyone else. When Maurice Herzog stood atop Annapurna in the early afternoon of June 3, 1950, he was the first man to have surmounted a peak of more than 26,000 feet. With him on that final ascent was Louis Lachenal, another member of the nine-man expedition. It had taken them eight hours, their bodies and brains made sluggish by fatigue and lack of oxygen.

The entire two-month effort began with a trek through the Nepalese jungle, a wilderness of gorges and torrential streams, and included the back-breaking task of establishing a chain of six camps higher and higher up Annapurna's flanks. The Herzog team had stormed the mountain with forced climbs, using techniques employed in the European Alps and relying on newly designed light gear like nylon ropes and tools and utensils of lightweight metal alloys.

The triumph of reaching Annapurna's peak was to have a cruel postscript. As the descent began, Herzog dropped his gloves and helplessly watched them roll down the slope until they were out of sight. Frostbite was now a certainty for him. Snowstorms and avalanches buffeted the expedition for the two days it took to quit the mountain. During the month-long journey to India—much of it through monsoon rains—gangrene set in, and Herzog's fingers and toes had to be amputated.

From his hospital bed in Paris, the 31-year-old French lawyer worked on the account of his expedition that would sell millions of copies all over the world. "Together," he said in it, "we knew toil, joy and pain. . . . In overstepping our limitations, in touching the extreme boundaries of man's world, we have come to know something of its true splendor." ☐

How now, Dow Jones
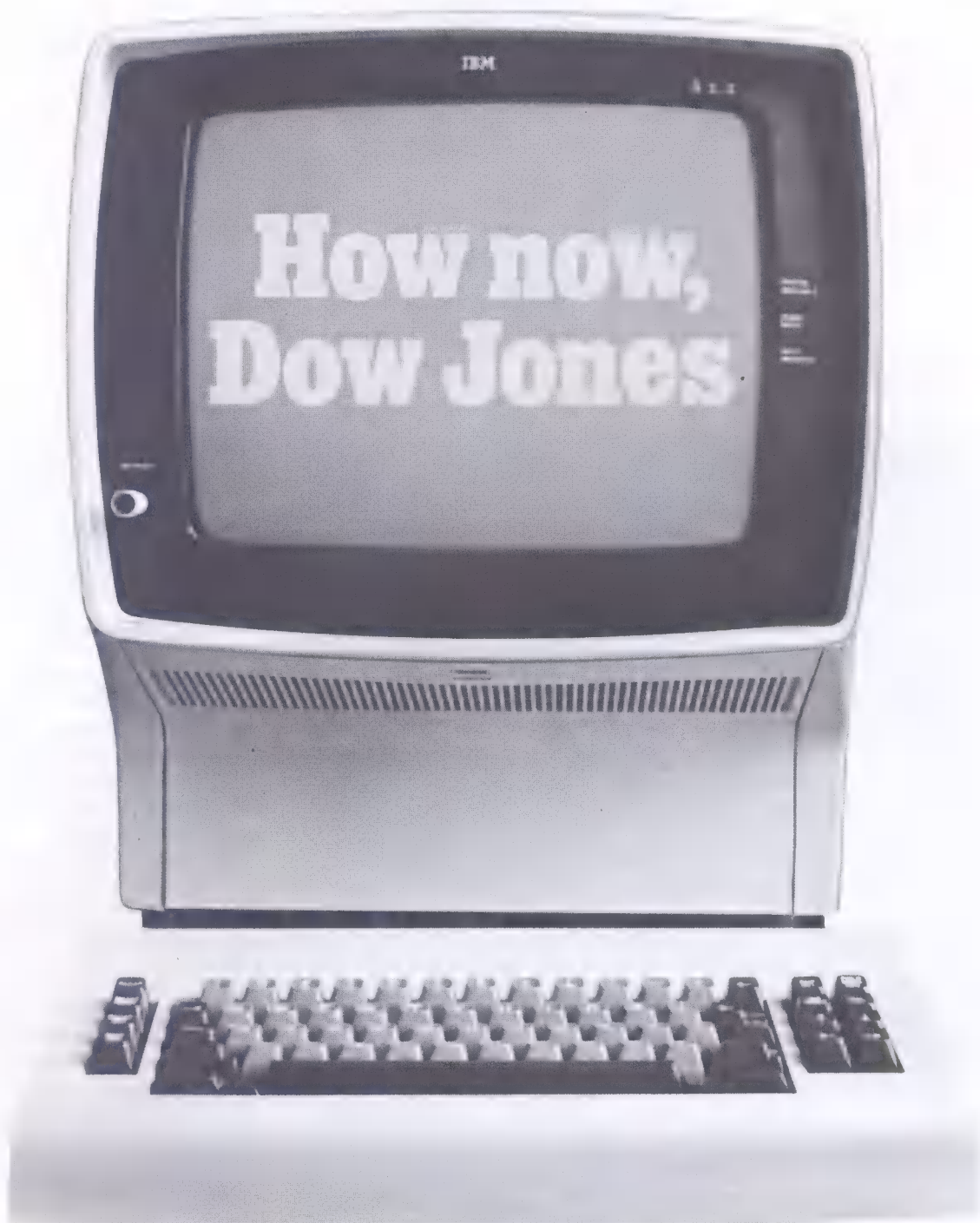
Daily, 1.5 million newspapers with the help of computers. Read all about it.

by Edward F. Pierce

His name was Charles Dow, and he took shorthand notes on his starched shirt cuffs when he covered a story for his newspaper in Providence, R.I. In 1880, or thereabouts, he decided to try his luck in New York City, and within two years he had persuaded a sidekick by the name of Jones that they could make a go of their own financial news service.

And that's how Dow Jones & Company came to be.

The beginnings, by any standards, were inauspicious: In a dingy basement room at 15 Wall Street, the two men wrote a daily bulletin—by hand—of 800 words to the customer. By the summer of '89, however, that handwritten newsletter had become the first edition of what is now a national institution: *The Wall Street Journal*. The first copy, off a Campbell flatbed press, was a four-pager carrying financial news and ads at 20 cents a line. Newsboys hawked it at Wall and Broad Streets, and circulation ran to about 200.

Today, it's 1.5 million. The paper zooms off high-speed rotary presses at the rate of nearly 1,000 copies a minute in 10 locations around the United States —and another in Hong Kong. And 95

percent of its subscribers get same-day copies.

The Wall Street Journal is still published by Dow Jones, and still edited amongst the canyons of Manhattan's financial district, in a building just across the street from the twin towers of the new World Trade Center. But Messrs. Dow and Jones would be astounded by the news-gathering and printing operations, since they also entail: a data processing center in South Brunswick, N.J., near Princeton, a sort of newsprint massaging site in Chicopee, Mass., 23 news bureaus worldwide, those 11 printing locations*, and even communications satellites thousands of miles out in space.

For a late-breaking story, the turnaround time is something to behold. As Dan Hinson, the paper's national news production manager, recalls: "One story I remember very vividly. It was a U.S. Treasury offer. The Treasury has notes coming due almost every day, and if it's a billion dollars' worth of notes, for example, they'll sell another billion to replace that amount.

"Usually, you can time these things, but this one caught us all off guard. Everybody figured it was going to be a straight swap, but in this case they were selling two or three billion to replace the one. So it was a very important story. But we didn't get the copy from Washington until 6:45 in the evening—and our first-edition lockup time is 7:10.

"But we did it. Everybody—all the plants—locked up with that story at 7:10, and it was in the news first thing the next morning."

That's how fast the system works—remarkable when one considers the itinerary of such a story:

First of all, every line of copy is funneled through the *Journal's* editorial

offices on Cortlandt Street in New York.

As soon as a story is edited, it goes by facsimile to Chicopee or White Oak, where it is punched into "idiot" or unjustified paper tape and then submitted to IBM 1130 equipment for justification into the *Journal's* standard column width for text, which is 15 picas, or two and a half inches.

Next, the data is fed—via the computerized Dow Jones Communications System, or DowCom—to an IBM computer in South Brunswick.

From there it flows to printing plants around the country, where multiplexors receive and reproduce the copy for automatic photo-typesetting.

The IBM computer does two things, according to Carl Valenti, manager of the newspaper's data processing services in South Brunswick. "One side of it is teletype, handling the news. More than 120 terminals in our news bureaus are hooked into the system. The other side of the system handles the typesetting in the plants. With these two functions —come rain, shine, or even blackout, like the one in New York last summer— we get a paper out five times a week in four U.S. editions: East Coast, Midwest, Southwest and West."

The Wall Street Journal also uses communications satellites and has its own earth stations—six in operation and one more abuilding. The satellites are used to transmit page facsimiles to plants where no makeup is done. The plant in Chicopee, for instance, feeds two others —in Orlando, Fla., and South Brunswick. On the West Coast, the Palo Alto plant in California transmits via satellite to its sister plants in Riverside and Seattle. Coming up is one more satellite operation in Denver, Colo.

Whatever and wherever the edition, the front page and editorial page are essentially the same. Thus, if an Easterner vis-

iting California picked up a *Journal*, he might wonder if he'd ever left home. All plants are offered the same inside news menu, and major stories will appear in all editions, though not necessarily on the same pages because of differences in the advertising layouts. (For advertising purposes, the *Journal* divides the country into regions and allows an advertiser to buy space in all or any combination of the four.)

The "news hole" is set daily by the editors in New York City, starting with a minimum of 84 columns in all editions, Tuesday through Thursday, and 87 columns on Mondays and Fridays. Advertising tries to come as close as possible to giving news the exact space it requests, but it has a leeway of up to two columns when it cannot be precisely on target. So, often the space for news will vary somewhat between editions, and this swing permits some editions to print secondary and/or marginal stories that won't appear in others.

DowCom links the whole data processing complex and is largely responsible for that 95 percent date-of-issue delivery. As for the other 5 percent, some of it can be accounted for in the European distribution, by plane. (The paper also goes into Eastern Europe—Hungary and Yugoslavia—and a few copies go to the Kremlin.)

In the Far East, it's another story. The Asian edition—*The Asian Wall Street Journal*, in fact—has been in business about two years. As William L. Dunn, vice president and general manager of Dow Jones, says, "When we planned the Asian edition, we determined that there was a void in the marketplace that we could fill. We figured that the people in Korea, Taiwan, Manila, Tokyo—all over Asia—wanted to know what was happening to business in their part of the world. It also made good sense, for example, for a hotel in Manila to advertise in a newspaper that went into Korea because there

Jim, left, and Larry Hasiak

A brother act keeps it all up and running

It's a brother act, so to speak, that keeps the IBM equipment up and running at *The Wall Street Journal's* data processing center in South Brunswick, N.J. The brothers are Jim and Larry Hasiak, IBM customer engineers. Jim looks after the hardware, and Larry the software. But they're quick to tell you that a fair share of the credit goes to Ed Flynn, a Field Engineering specialist, who watches over the teleprocessing gear.

As Jim Hasiak says, "It keeps us all going full blast." It's what he calls a "critical account" because there are two on-line systems, "and the customer wants downtime kept to an absolute minimum."

The Hasiak brothers and Ed Flynn have been on the *Journal* account for about 10 years now, just about as long as Jim has been with the company. (His elder brother had joined a few years earlier.) They both began working for IBM in Trenton, and it's still home base for them, about 25 miles from South Brunswick.

The fact that two brothers are servicing the same account is mere coincidence. As Jim Hasiak says, "It just happened." And Flynn adds: "It just so happens that Larry is the best DOS [Disk Operating System] man we've got."

Because the newspaper had special teleprocessing requirements at the outset, Jim Hasiak recalls, "Ed Flynn and I had our work cut out for us, getting it up and going. Raleigh supplied us with the equipment, and then Ed spent two or three months adapting it, shooting all the bugs that show up whenever you have a new installation." □

are Korean businessmen who travel to the Philippines.

"So we set up a partnership with *The South China Morning Post,* the *Nihon Kezai Shimbun* in Tokyo, which calls itself *The Wall Street Journal* of Japan, *The Straits Times* of Singapore and *The New Straits Times* of Malaysia. The *South China Morning Post* prints for us. The news from the States comes by satellite from Hawaii, but unlike editions in the U.S., the Asian papers carry regional stories.

"When you stand back and look at the globe and see how far it is from Chicopee to Hong Kong, and realize that you can service that marketplace five days a week—well, it makes you stop and realize you can supply information to any part of the world."

For people who need news as it is being made, Dow Jones has an Information Retrieval Service, introduced last year. At the heart of it is an IBM System/370 Model 138 in Trumbull, Conn. As IBM's account representative Bernard Pincus describes it, the system contains information about some 6,000 companies and organizations. It is culled from stories that move on the Dow Jones news services, and from articles that have appeared in the *Journal* and other news sources within the past 90 days.

"A subscriber to the service simply keys in a code number at his terminal keyboard," Pincus explains, "and gets a printout of headlines relating to whatever company or industry he wants. Next to each headline there's another code, and by keying that in, he can retrieve the full story. A subscriber can do searches on any company listed on the stock exchanges—New York, American or Over-the-Counter. He can also get stock averages, but they're delayed 15 minutes because of the law."

Along with its news-gathering, printing and retrieval equipment, *The Wall Street Journal* also uses the System/370

Models 138 and a 148 (future plans include migration to 3031s) for business applications.

"One of the most interesting projects we are working on in this area," says Carl Valenti, "is a system we call PARIS —People and Related Information Systems. We expect to go on-line with it this coming July. It's a data-base oriented system and will contain all the necessary information required by our Treasurer's, Payroll and Personnel departments."

When Charles Dow put it all—quite literally—on the cuff back in the 1800's, he started something. □

With over 120 terminals involved, IBM equipment helps with both news and typesetting.
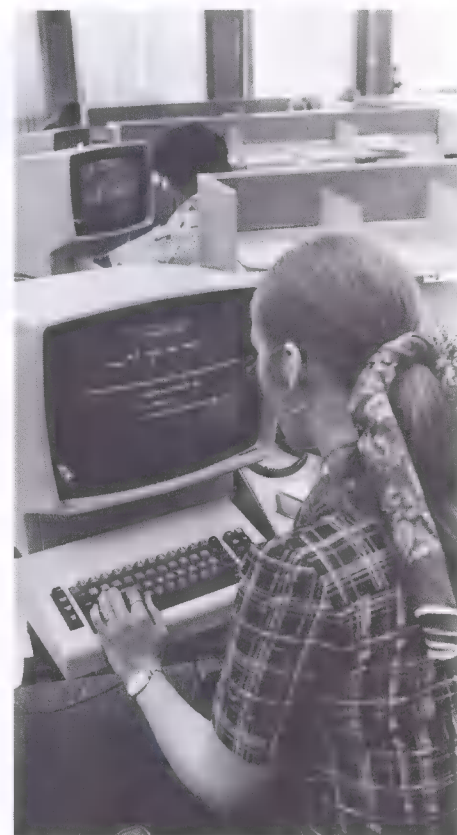
DRESDEN
Comes to Washington

by Claire Stegmann

The Splendor of Dresden: Five Centuries of Art Collecting, the featured exhibition that celebrated the opening of the National Gallery of Art's new East Building in Washington, on June 1, is, according to critics, "one of the most magnificent ever mounted in America." It was made possible by a grant from IBM.

Last fall, the company funded the late works of the 19th century's Paul Cézanne, at New York City's Museum of Modern Art, an exhibition that later went on to Houston and is now at the Louvre's Grand Palais in Paris. The Washington exhibition is a dazzling display of masterpieces and objets d'art dating back half a millennium.

The Dresden exhibition is also, in its way, a museum's return to roots. For today's highly specialized public museums, including the National Gallery, can trace their origins to the five-century-old tradition of art collecting that began in Dresden and other European cities during the Renaissance. To display the Dresden treasures, museum officials have actually recreated some of the princely surroundings of the collections to which they historically belonged.

Dresden has often been called the Florence on the Elbe, in tribute to the collecting instincts of the duke electors of Saxony, absolute rulers of Germany's 16th, 17th and 18th centuries, who vied with France in acquiring the finest fruits of Renaissance Italy. The city has seen its share of war—first from the armies of Frederick the Great and Napoleon, and again in 1945, when it became a casualty of World War II.

Miraculously, many of its treasures have survived to grace the state museums of Dresden, which is now a part of East Germany. This spring, in an unusual cooperation between East and West, more than 700 of these have crossed the ocean. All summer long, Washington tourists will have ready access to Old Masters, baroque bronzes, jeweled armor; pieces of gold, silver and precious stones; pearl, ivory and rock crystal vessels; coral and rhinoceros horn; rare porcelain—treasures that 300 years ago were reserved for the eyes of the king and his curators.

There are also examples of 19th and 20th century German and romantic expressionist art to round out the exhibition, which will remain in Washington until September. Then it moves on to the Metropolitan Museum of Art in New York and, next February, to the California Palace of the Legion of Honor, one of the fine art museums of San Francisco. These museums also helped to organize the show.

The duke electors of Saxony—so named because they were among the group of European leaders privileged to elect the Holy Roman Emperor—collected works of art to glorify their image as monarchs. Then they couldn't resist showing off their treasures. During the early 18th century, Augustus the Strong opened the doors of the Green Vaults, the palace treasure-house, to a few well-chosen guests, provided they left their swords at the door.

The collections were so well catalogued and so artfully arranged that some

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The Splendor of
DRESDEN
Five Centuries of Art Collecting

Washington, D.C.
National Gallery of Art
June 1-September 4, 1978

New York City
The Metropolitan Museum of Art
October 21, 1978-January 13, 1979

San Francisco
California Palace of the Legion of Honor
February 18-May 26, 1979

Made possible through a grant from the IBM Corporation, with additional funding from the Robert Wood Johnson, Jr. Charitable Trust, the National Endowment for the Arts and the National Endowment for the Humanities.

of the techniques used by the curators are standard in museums today. And, reflecting as they did the scientific acquisitiveness of the Renaissance mind, they included ▪ variety of artifacts that anticipated the public museums of learning that came into being in the 19th century.

Visitors to Washington's Smithsonian Institution, of which the National Gallery is a part, would no doubt have been at ease in the *Kunstkammer* of Augustus I. This "closet of curiosities" wasn't ▪ closet at all, but several rooms in the royal palace that contained not only paintings and statues, but shells and stones, tools and books on mathematics, geography and astronomy, even—dangling from the ceiling by a golden chain

John Sherman Cooper, center, former U.S. Senator and Ambassador to East Germany.

I. M. Pei, architect for the Gallery's East Building, and wife, Pearl, with Rolf Sieber, East German Ambassador to the U.S. and Hans-Joachim Hoffman; Minister of Culture, German Democratic Republic.

—the horn of the legendary unicorn.

Dresden owes its magnificent art col-

lection—some fine works of Dürer, Cranach, Bruegel, Rembrandt, Rubens, Titian, Vermeer, among others, are in the show —to the art appetites of Augustus II, known as Augustus the Strong, and his son Augustus III, who collected masterpieces with abandon, sometimes emptying the royal coffers in the process.
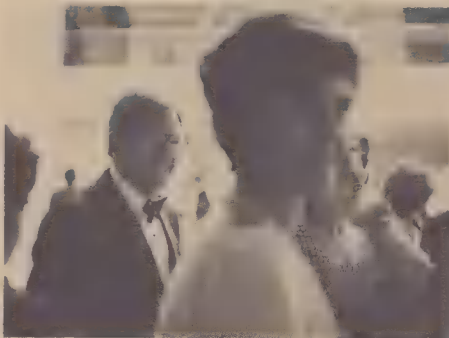
In his youth, the elder Augustus had taken the Grand Tour, and he never quite recovered from the splendors he saw at Versailles. Determined to match the Sun King, he bought for himself the throne of Poland and used the tax money from Saxony's rich silver mines to gather hun-

Guests arrive at the Dresden exhibition after the opening-night dinner on May 31.

The Splendor of Dresden

dreds of Italian, Dutch and Flemish masterpieces. He commissioned a building to house his collections: Matthaus Pöppelmann's magnificent Zwinger, the finest example of baroque architecture in all Germany.

His obsession, though, was porcelain, the formula for which was known only in the Orient. Augustus II once bartered 600 dragoons* for a batch of large Chinese vases. When alchemist Johann Friedrich Boettger accidentally stumbled on a way to make it from the white kaolin clay of the Saxony mountains, the king set up a factory in Meissen and virtually imprisoned the workmen (many of them mute), swearing them, monthly, to an oath of secrecy.

During the reign of Augustus the Strong, Dresden became a city of festivals, with the Zwinger, a structure of seemingly endless galleries, pavilions, statuettes and cupolas, as the focal point. Masquerades, hunting parties, shooting competitions and balls enlivened one of the most elaborate courts of Europe (there were 90 ranks of privilege). Appropriately costumed musicians from the king's own orchestra accompanied the parades, complete with fireworks. For banquet tables, court confectioners outdid themselves, sculpting sugar ornaments as dainty as Dresden china into whole gardens of fountains, trees and natural-colored flowers, with sugar courtiers and their ladies promenading on the paths. The wedding celebration of the prince elector and the daughter of the Austrian emperor lasted nearly ■ month, and costumes were changed every day.

Augustus III, more intellectually inclined than his pleasure-loving father, was even more acquisitive. He was willing to talk about anything so long as it was the painting he had just bought. He

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* Soldiers for hire were a booming business in 18th-century Saxony. That's where the Hessians of the American Revolution came from.

IBM Chairman Frank T. Cary and J. Carter Brown, right, director of the National Gallery of Art.

IBM President John R. Opel and wife, Carole, background, right.

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once paid a dozen barrels of gold to the Duke of Modena for 100 masterpieces. Like his father a convert to Catholicism for political reasons, he was determined to have Raphael's Sistine Madonna, though it took his agents a year to pry it loose from the Benedictines of the San Sisto Monastery at Piacenza. They ultimately did so, after a substitute painting was found, for the price of 25,000 scudi ($50,000). When the Madonna arrived at the palace, the story goes, those who carried it to the impatient king were reluctant to place it in the best light, since that was where the throne stood.

The king himself pushed the royal seat aside, exclaiming, "Make room for the great Raphael!"

The Seven Years' War, which nearly finished Saxony, ended the royal buying spree, but by then, the collecting duke electors had cornered so many masterpieces that even after 200 years, the Dresden collection had few equals. If Florence had its Uffizi, Dresden had its Zwinger. Or did until the bombs came in 1945.

When the smoke had cleared, the great dome of the Frauenkirche, ■ landmark for over 200 years, was gone. So were the opera house and the old Hofkirche, with its needle-like spire and 59 sandstone saints. Of the royal palace, only the Green Vaults remained, protected by walls that were seven-feet thick. But the

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biggest architectural casualty of all for the people of Dresden was their beloved Zwinger.

Fortunately, in 1945, most of the Zwinger's priceless treasures were already hidden away in castles and fortresses outside the city, just as they had been when Frederick the Great and Napoleon's armies overran Saxony in 1756 and the early 19th century. Unfortunately, as the Russians advanced, the Nazi High Command panicked and moved the Dresden masterpieces to hastily selected new depots. Many were lost in transit. The Sistine Madonna and an assortment of Giorgiones, Titians and Tintorettos ended up in a railway tunnel near Pirna, where they were stacked like so much attic junk. Other canvases, stored at the bottom of a 150-foot deep limestone pit between Saxony and Czechoslovakia, were exposed to every passing rain and the danger inherent in being right alongside a munitions dump.

As soon as the Germans surrendered, ■ special task force of Soviet troops and

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J. Carter Brown, director of the National Gallery, and wife, Pamela. At rear, the moving walkway from the old to the new building.

C

Visitors view decorative objects and
precious stones—Saxon treasures from
the mirrored Green Vaults.

To accommodate a difficult site—an
eight-acre trapezoid that appears in
architect Pierre Charles L'Enfant's orig-
inal plans for Washington—Pei has de-
signed two marble triangles of differ-
ing size. One contains a library center.
The other has been shaped into both
large and small triangular and hexagonal
galleries. The diminutive four-by-six-inch
French paintings, in one of the five other
shows that inaugurate the new building,
are as much at home under a 10-foot-
high roof as are the two knights from the
Dresden collection, jousting in a middle
court that, at its highest point, reaches
80 feet.

J. Carter Brown, director of the Na-
tional Gallery since 1969, notified the
U.S. State Department of his intention
to pursue a loan of the collection from
Dresden on the morning the press an-
nounced that the U.S. and the East Ger-
man government were about to establish
diplomatic relations. That was in 1974,
four years before the new building was
completed and a year before the East
German ambassador approached Brown
with the same idea.

The current exhibition on Washing-
ton's Potomac explains his eagerness. □

art experts rounded up the masterpieces.
They were shipped to Moscow and Kiev,
where dirt and mildew were removed,
cracks and varnish repaired. More than a
third required a complete restoration.
They remained in Russia for 10 years.

Meanwhile, the people of Dresden,
hungry and with few tools, set about re-
storing the Zwinger. Expert stone ma-
sons, builders and sculptors came from
all over Germany (still undivided at the
time) to match the stones with those from
nearby quarries and painstakingly fit
pieces of copper and gold leaf back into
place. A single statuette took 20 years to
make, and there were hundreds of stat-
uettes. When the first galleries were re-
opened in 1956, complete with the newly
returned pictures, Dresden declared ▮

general holiday.

On this side of the Atlantic, the objects
are housed, according to architecture
critics, in surroundings worthy of a king's
treasure. The East Building, says Ada
Louise Huxtable of The New York Times,
is "a powerful palatial statement" that
moves the National Gallery "into the 20th
century in a major, magnificent way."

In development for 10 years, it was
given to the nation by Paul Mellon, Ailsa
Mellon Bruce and The Andrew W. Mellon
Foundation. Philanthropist Mellon, who is
president of the National Gallery, per-
sonally chose the architect, I. M. Pei.

*The new Gallery building features a
massive skylight which rises to 107 feet.
Top right is Alexander Calder's three-story
mobile. Below, life-size jousting knights
signal the entrance to the Dresden Exhibition.*

D

The art of the small
bronze (left) reached
its peak in the second
half of the 16th cen-
tury. This Leaping Uni-
corn from Augsburg is
not quite 15 inches
high.

The elegance of out-
line and movement of
this ivory group (right)
makes it a forerunner
of Meissen's famous
porcelain sculpture. It
was signed by the
court sculptor to
Augustus II, about
1690.

Made especially for
the king's hunting
lodge in 1739, this
porcelain vase with
cover (below) is from
the Meissen factory
established by
Augustus II.
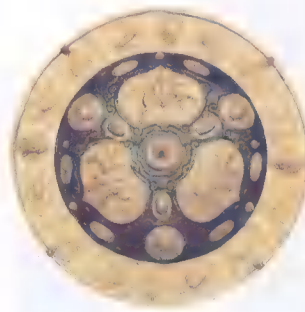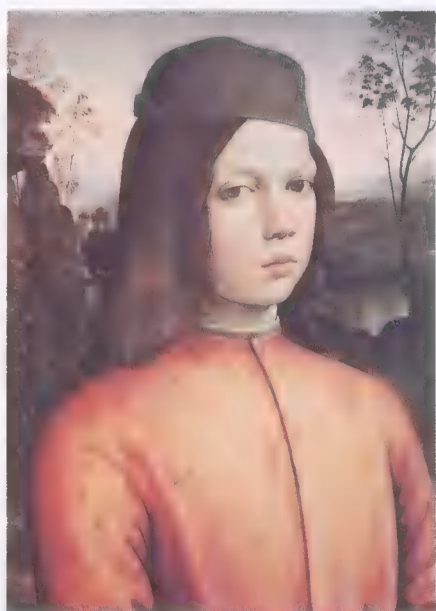
The Portrait of a Boy,
(far left) painted
in the 1480's and
believed to be of
Italian Renaissance
painter Raphael, per-
haps a self-portrait.

Landscape with Trees,
(left) painted in 1928
by Karl Schmidt-
Rottluff, a founder of
the Brucke School
of artists who revolted
against the artistic
establishment of the
early 1900's.

The Sermon of Saint
John the Baptist,
(lower left) by 16th-
century artist Herri met
de Bles, who often
repeated his land-
scapes, changing only
the subjects in the
foreground.
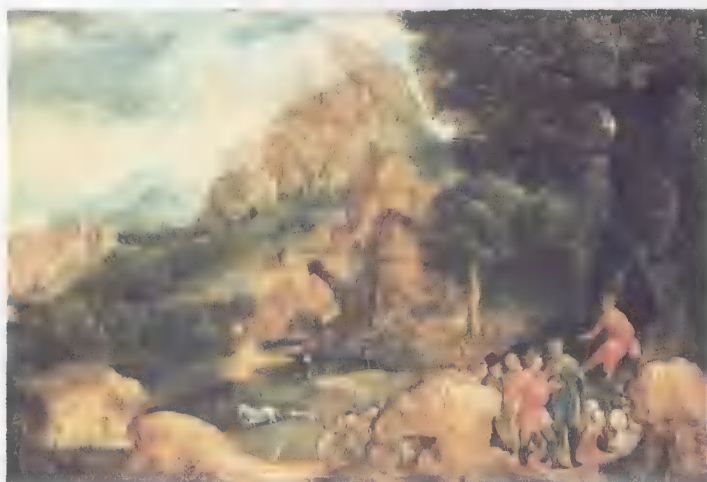
German battle helmet,
or burgonet, made of
black steel and copper
gilt, about 1600.

Roman heroes were
favored by Renais-
sance artists. Hans
Baldung Grien's
Mucius Scaevola,
(right) painted in
1531, depicts a Roman
hero of 508 B.C.,
Gaius Mucius. Cap-
tured and threatened
with torture for trying
to assassinate the
Etruscan king, Por-
senna, as he was
besieging Rome, the
unrepentant Roman
demonstrated his
fearlessness by hold-
ing his hand over a
basin of burning
coals.

An awful lot of heat goes into the making of a computer's circuitry. An awful lot comes out when the machine is running. The trick is to use, not waste, it.

The world of data processing has been hit by ≡ heat wave.

Not the midsummer kind that causes sleepless nights and sunburnt days. But by a high wave of technology that has brought exotic applications for what is perhaps the oldest (five billion years) form of energy on earth: heat itself.

IBM's Burlington, Vt., facility, for example, is one of the hottest—literally—manufacturing operations in the data processing field. A hundred or so super-hot diffusion furnaces work round the clock to process semi-conductor silicon and turn it into transistors for all kinds of IBM equipment, ranging from terminals and typewriters to the System/370 Model 168. The heat ranges up to 1,200 and 1,500 degrees Celsius, and since variations of even one or two degrees could be critical, IBM computers are used to keep tabs on the operation.

Such is the climate in which IBM computers and components are made. But heat hasn't always been a willing servant. More often, it's been the thief of power.

In the pioneering, vacuum-tube days of the computer, for example, a frail filament was heated to incandescence to achieve electrical flow. Heat, then, was often the deciding factor in reliability, cost and lifetime. As operating temperatures soared, so did operating problems.

Today, transistors have changed computer operations spectacularly, with a good deal of that change linked to heat. With the vacuum tube, most of the power went into heating the filament. But the transistor doesn't require large amounts of energy to set electrons free; it needs only the power to put out the desired signal. Some transistors, in fact, work on the incredibly small power of six ten-millionths of a watt—the energy expended by a flea jumping just once in eight seconds. (A protein called resilin is concentrated in the flea's hind legs, and that gives it a takeoff power 40 times greater than that achieved by man.)

When IBM built its 701 computer in 1952, the 5,000 vacuum tube circuits put out 127,900 BTU's of heat. The System/370 Model 168, built 20 years later, puts out twice as many BTU's with roughly

the same power input, but contains 65,000 to 70,000 circuits. So, even though the watts per cubic inch have gone up, the work done is greater, and the cost has dropped dramatically—from $1.26 per 100,000 multiplications two decades ago to seven-tenths of ≡ U.S. penny today.

Silicon circuitry seems now to be reaching a limit of its own. And heat—far too much of it, in this case—is again a critical factor.

Consider a computer in which basic operations are carried out at the rate of one per nanosecond, a billionth of a second. Such a computer could not be much bigger than one cubic inch and might contain 100,000 logic circuits—each circuit switching signals in less than 50 picoseconds (a picosecond is a thousand billionth of a second). A silicon

circuit now generates only tens of milliwatts of heat, hardly enough to feel. But the wattage generated by a 100,000-circuit computer is something else. To remove all that heat from one cubic inch of circuitry would be virtually impossible.

This dilemma may be resolved by a new kind of circuit made of devices called Josephson junctions, which hold promise of giving us the fastest computer yet devised. They were named for Nobel Prize-winning physicist Brian Josephson of Cambridge, England. While a graduate student there in 1962, he came upon a remarkable phenomenon: Electrons will "tunnel" through the gap between a sandwich of metals (lead and niobium, for example) which have been made superconducting by immersing them in liquid helium at a temperature near absolute zero, minus 273 degrees Celsius, as if the gap were superconducting, too.

At this temperature, where molecular motion ceases, some metals lose all resistance to electric flow. Josephson found that electrons will bridge the gap in the metal sandwich without applying voltage. The effect has been used in instruments to detect voltages on the order of one thousand billionth of a volt, and to measure minuscule magnetic fields such as those generated by ions in the bloodstream of the heart and the waves generated by neurons in the brain.

In view of the ease of flow across the sandwich junction, IBM scientists were quick to see that the Josephson effect could be harnessed in an on/off switch that could outpace any other switching element. An IBM team in Zurich, Switzerland, recently made the first main experimental memory type circuit based on the Josephson principle and found that it could be "accessed" in seven nanoseconds—many times faster than the memories of today's best computers. At the same time, another IBM team, at the Thomas J. Watson Research Center in Yorktown Heights, N.Y., made logic cir-

cuits and verified that they function with a 40-to-100 picosecond delay.

"We're optimistic about this approach," says Dr. Wilhelm Anacker, manager of exploratory cryogenic technology at Yorktown, and in charge of Josephson research. "We think the principle could become the basis of the high-performance computer of the '80s or '90s."

Meanwhile, the computers of the '70s are doing their bit to make the most of today's available energy—and heat.

The IBM System/7, for example, is being used in many IBM locations—at Poughkeepsie and the new General Systems Division's headquarters in Atlanta, for example—to monitor heating in winter and air-conditioning in summer. The purpose is to keep those energy costs at a minimum. And in other locations, the heat generated by the computers themselves is being diverted and used for heating and cooling. (Nor does IBM keep such ideas to itself. Installation manuals for IBM equipment now include instructions for customers on how to make use of otherwise wasted heat.)

The sun itself, the crucible that lights and heats our world, has come in for increasing attention as a source of harnessable heat. Witness Sun Day in May, when sun power and solar heating devices were celebrated across the U.S. Many small rooftop solar generators are now commercially available for home and hot water heating. But a feasible technique for extracting large amounts of heat and power from the sun still lies somewhere in the future, mainly because of economics and the potential difficulty of maintaining a large array of solar cells against weather extremes.

IBM scientists have been working at decreasing the costs and increasing the efficiency of solar conversion. Two of them, Jerry M. Woodall and Dr. Harold

Hovel of Yorktown, are using gallium arsenide, which is more efficient than silicon but not as well studied. Hovel is among those who have suggested using a combination of solar cells that respond

Some transistors today need only six ten-millionths of a watt to operate. That's the energy expended by a flea jumping just once every eight seconds.

to different parts of the solar spectrum. They could be activated through lenses that concentrate the sun's energy, thus reducing the number of costly solar cells.

Such applications and developments have one essential thing in common. They've been made possible by new insights into that ancient phenomenon, heat, mankind's most ubiquitous form of energy and earth's oldest.

According to current theory, the earth broke from the sun five billion years ago, and for a brief time (say, a few millennia) it was as hot and incandescent as the sun itself. As the earth cooled and its solid crust formed, the heat that remained was pressed into the earth's core, from which it now leaks out spottily through volcanoes and geysers.

Heat on earth today is less violent than it was in primordial times. But it's a force to be reckoned with. It regulates the energy balance among land, sea and air and is responsible for the variables of temperature around the globe that create weather. The wind, for instance, blows when cold air rushes in and pushes hot air up.

In living things, heat is especially critical. A bird is so finely attuned to it that a single degree out of line in its metabolism could be fatal. A rattlesnake can aim its poison at a spot which it detects by heat emanations so weak that it would take fine instrumentation to detect them.

And a human being? It would be in serious danger if its internal heat were raised more than seven degrees or lowered more than two. It would be, even though it lives in an environment ranging from a high of 134 degrees F. in Death Valley to a low of 127 below in the Arctic. The human body can nevertheless withstand as much heat as 250 degrees.—but very, very briefly.

As for those transistors bred at IBM's Burlington plant, they need all the heat they can take. For computers, then, the heat is definitely on. □

From a long-ago world of time clocks to the brand new world of word processing

His second day "on the street" as a salesman, Bart Stevens closed an order for four time clocks. Right up until that April day 32 years later when he packed his farewell gifts and snapped shut his attaché case, he kept the zest and optimism of a marketing man. Many who worked with him called his bounce downright Humphreyesque.

"We will miss him," said IBM Chairman Frank T. Cary. "Bart has been an outstanding member of IBM's management team, both as an Office Products Division executive and as a member of the Corporate Management Committee. His contributions to the company's success have been significant."

When Stevens moved to Armonk in 1976, he took on the first staff job of his career. As a senior vice president and CMC member, he headed the Corporate operations staff, which takes in marketing, manufacturing, service, engineering, programming and technology. "It was quite a switch," he remembers.

"But I think I was ready, because in those years at OPD I had learned to use the Corporate staff effectively, and I knew the great contributions it could make to a division."

Almost from the first time he hitched up his chair to a CMC meeting, Stevens was heartened to see how the major issues of the business "percolate all the way up." He was pleased, too, to discover he needn't play the role of missionary for the OPD side of things. "The awareness was there," he says.

With good reason. OPD had already come far and, in the two years since, has, if anything, stepped up the pace. "We have a mix of products now being applied to the office environment," says Stevens, "that can bring about the same kind of productivity that we find in the data processing and manufacturing environments.

"OP is a fascinatingly complex business. The marketplace is loaded with competitors and vendors of all sizes. It's a tough, fast track."

Could he put his finger on one product that had led the way? "It gets all mucked up with hindsight, but I think it was the magnetic tape typewriter we introduced in 1964. It took off slowly, then suddenly we were selling in a year five times what had been expected.

"I think from that point on, we knew what might happen."

It was actually a few years before the appearance of the magnetic tape typewriter that OP veered away from the simple electro-mechanical kind of business it had been. "We decided in 1960," says Stevens, "that we had to enlarge our horizon if we were to accomplish our target of doubling every five years.

"You know, OPD used to be the technical 'tail-end Charlies' of the corporation—I think they made the last tube machine, the last machine that used relays. Today, they find themselves frequently the division that's on the leading edge of a variety of technologies."

And Stevens himself has been in the middle of it all—as salesman, sales instructor, district manager, electric typewriter sales manager, assistant general manager, vice president of operations, executive vice president and, from 1969 to 1976, division president.

The jobs changed, but his philosophy of picking good people, then giving them room to work, held fast. "I never saw any reason to change it," he says, "and I think it holds true today more than ever. People—and not only young people—want to know the rationale behind what they're being asked to do. When you tell them, they produce for you."

Bart Stevens was born in Sioux Falls, South Dakota, in 1918. He attended the state university for a year, then left to sell life insurance. He joined the Army Air Corps as a private and left it as a major. He lives now in Franklin Lakes, N.J.

The last afternoon of an active career is a combination of last-minute business, handshakes and farewells—and reminiscing. Stevens's was no exception. "I've been one of those fortunate people who look forward to the job every single day," he said. "It wasn't only the excitement of being a part of a growing and dynamic division with an exciting product line that was stimulating. More important were the great people I had the good fortune to work with.

"The coming to work every day—that stops. But friendships and relationships built over the years—they'll go on."

—ED GRIMM

Stevens greets retired OPD employee Walter T. Griffin, Jr., left, at 1977 Hundred Percent Club.

Whale of a librarian

How a rare books scholar is helping to save the whales with data from old whaling logs.

by Geoffrey D. Austrian

Two weeks before the U.S. Endangered Species Law went into effect in 1972, imposing a ban on the importation of whaling products, Stuart C. Sherman returned from a vacation spent at a shore whaling station on the Portuguese island of Madeira. Among the items in his luggage that piqued the interest of the customs official were samples of whalebone, a piece of ambergris (believed to originate in the intestines of the sperm whale) and a small container of processed spermaceti oil.

"What did you do on your vacation?," he was asked.

"I went whaling," was the reply.

"And what is your profession?"

"Rare book librarian."

"You must be kidding," the customs man said incredulously and waved him by.

Actually, Sherman, whose title is Brown University library bibliographer and associate professor of bibliography, merely accompanied the Madeiran natives in their small boats to see how old-time whaling is done. While most of his days at the university's John Hay Library are filled by editing a scholarly journal, teaching a course in the history of the printed book and encouraging fellow alumni—Sherman himself is class of '39

—to donate rare manuscripts, he also strenuously follows his avocation. For the past 25 or 30 years, he has been logging away on three-by-five-inch index cards the whereabouts and contents of manuscript whaling records, notably the logbooks of whaling voyages.

What use are the hand-penned records today?

"Geographers, oceanographers and geologists are interested in the sightings of rocks, reefs and islands," says Sherman. "Anthropologists, in the contacts of the New England whalemen with Eskimos and natives of the Pacific islands. And medical historians, in the treatment of crew members—for example, how they treated a man who fell from the
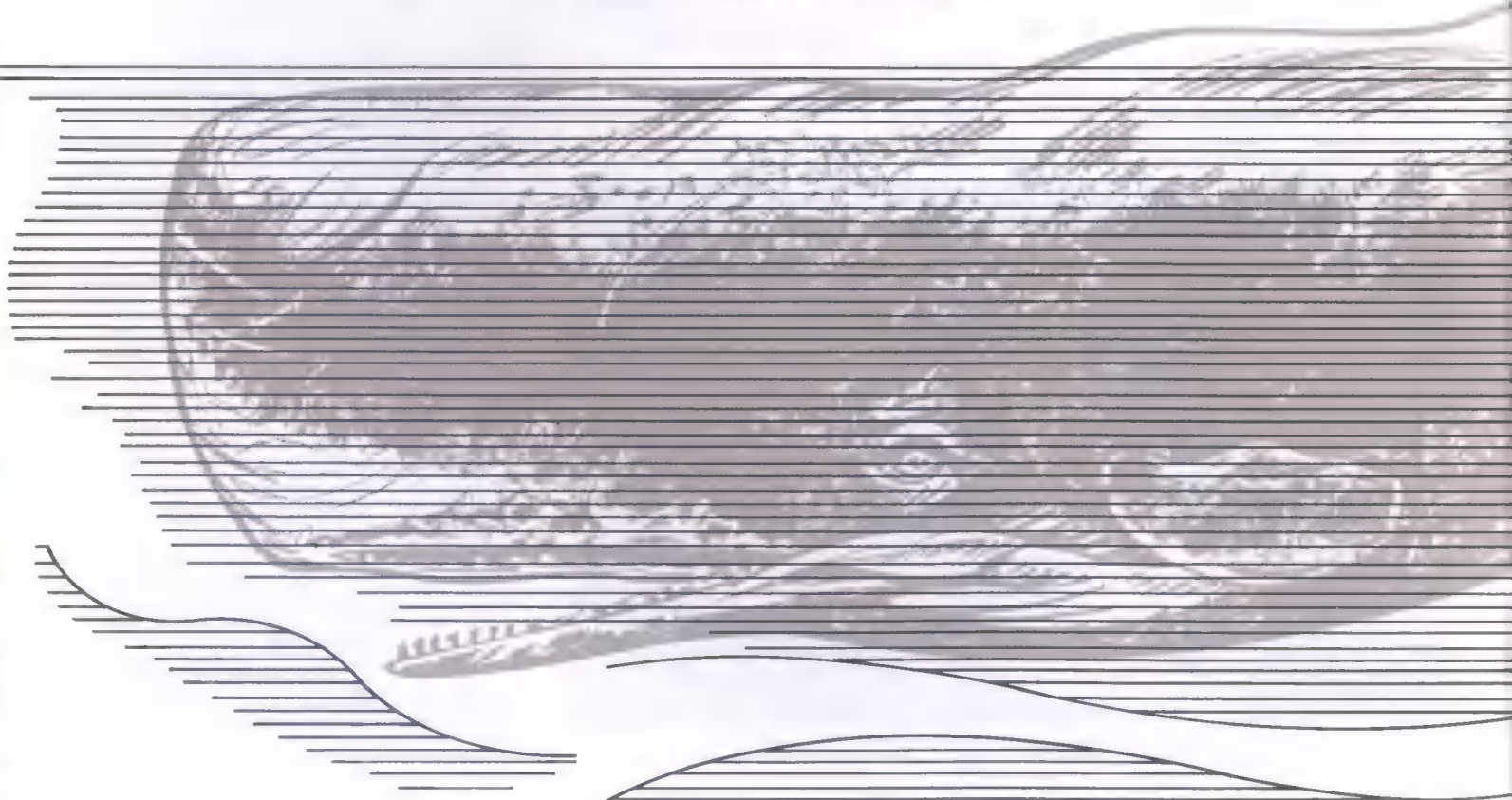
masthead or slipped overboard in Arctic waters."

But the greatest potential, he says, is in helping the International Whaling Commission set quotas for the killing of whales.

"The logbooks usually reveal the number of whales spotted, taken and lost, and the take by other vessels. By studying this information for successive years, the people who project whale populations believe they can find out a good deal about the survival rate of various species."

Sherman has been busy editing the lists he receives into a standard format for entry into an IBM System/360 Model 67 at the Brown Computing Center. (The center also has a System/370 Model 138.) A sample printout shows an alphabetical list of vessels: *Hercules, Hesper, Huntress* . . . Each entry is followed by a description of the record, whether it is complete, the type of vessel (whether it is a ship or a bark, for example), the name of the master, the whale species sought, the whaling ground visited, the dates of the voyage and the institution where the record is held.

"We are programming the computer to index this material by categories," says Sherman. "If someone, for example, wants to study the sperm whale in the Southwest Pacific in 1846, we will be able to turn up the pertinent logbooks in certain museums and libraries."

An impeccably dressed man, turned out in blue blazer and well-creased flannels, Sherman is hardly the type to festoon his car with "Save the Whales" bumper stickers. Even if the graceful mammals were not gradually being recognized as an endangered species, he probably would have continued to sound the depths of whaling records for future historians of the industry. But an overseas telephone call from Bergen, Norway, in August 1976 brought new relevance to his labors. A United Nations scientific conference on the marine mammals was being held there for cetologists, historians and museum curators from all over the world. Would he, the official queried, help explore the possibility of using historical whaling records to determine the status of past and present whale populations?

"Naturally, I was intrigued," he says. "It also struck me as ironic that the rec-
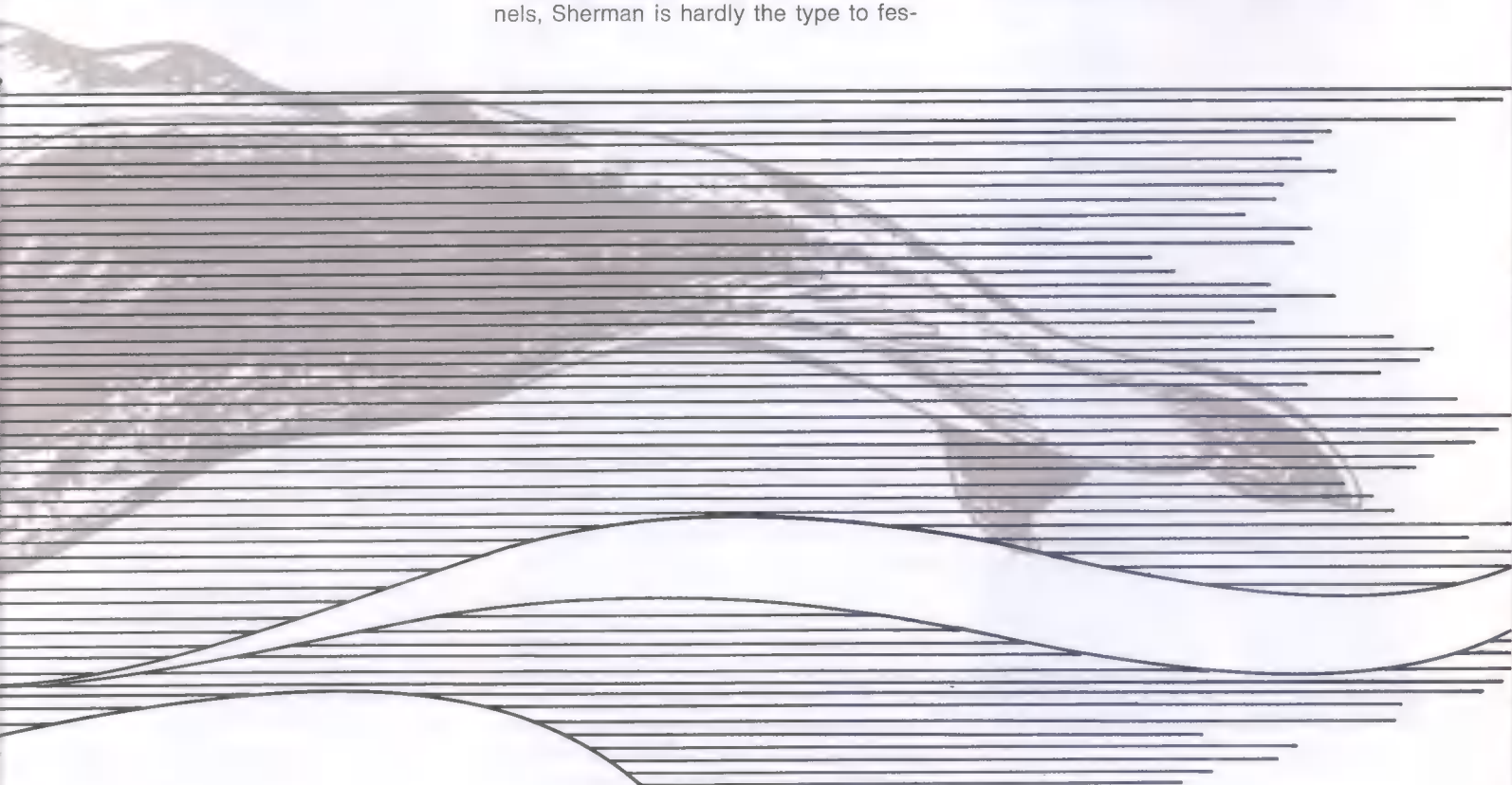
Rare book librarian Stuart Sherman, contemplating a whale's tooth, is compiling the first computerized worldwide inventory of whaling logs and journals. Records, such as the log of the New Bedford bark Pioneer, *may help scientists determine the survival rates of various species.*
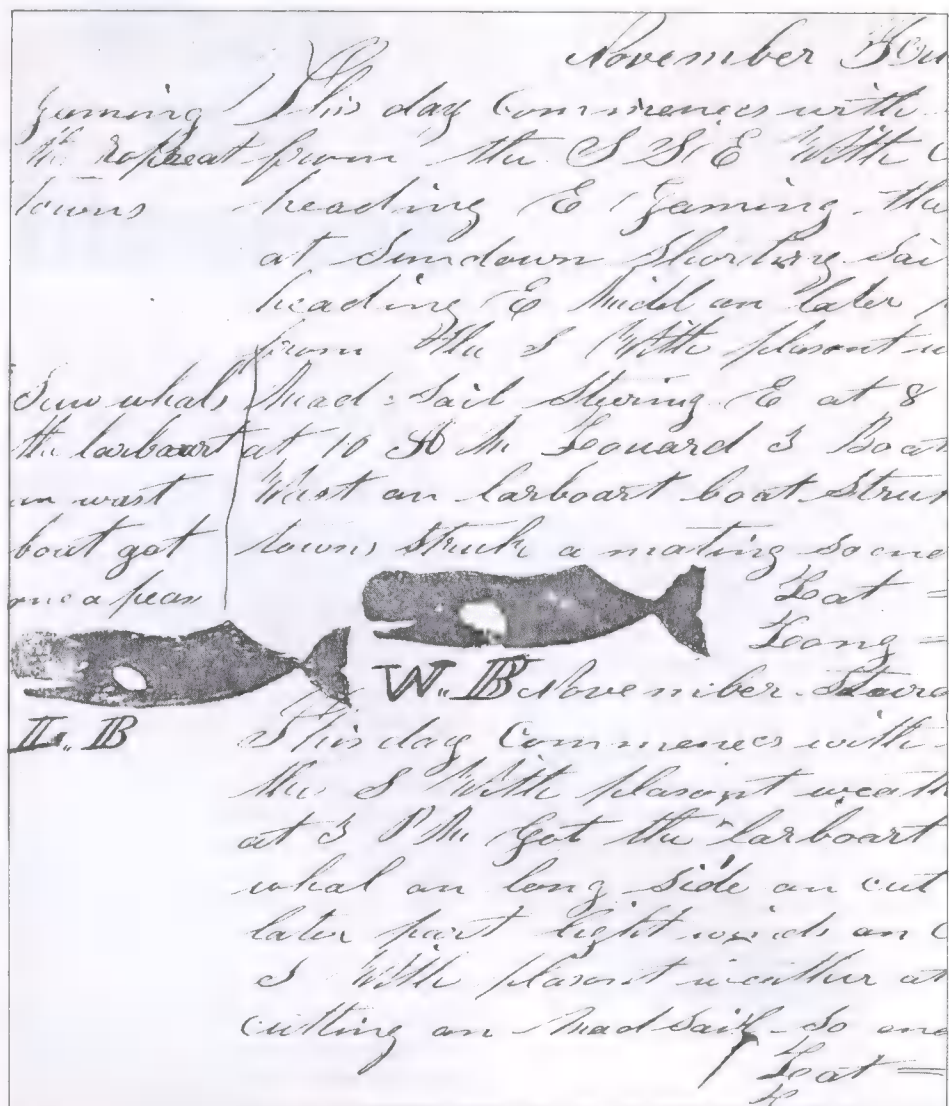

ords of the old whaling industry might play an important part in preventing the extermination of whales today."

The project took more tangible form following an international conference on historic whaling records at Sharon, Massachusetts, last September, where Sherman presented a paper on *The Nature, Possibilities, and Limitations of Whaling Logbook Data.* At the close of the week-long conference, he was asked to prepare a world inventory of whaling logbooks and journals.

Hardly a day goes by that he doesn't hear from some faraway repository, such as the Scott Polar Research Institute at Cambridge, England, or discover that some unlikely place, such as Yale, is sitting on a small pile of logs.

How complete and accurate are whaling records?

Approximately two-thirds of historic whaling voyages were made by American vessels. However, only about 4,000 logbooks, says Sherman, are believed to have survived from the 13,927 voyages known to have been made by U.S. vessels from colonial days through the 1920's. So far, he has ferreted out an additional 400 logbooks from outside the U.S.

A logbook, he explains, is the official report made to the owners of a major business venture. Typically, three entries were made each day. "Most of them were pretty routine, relating to the setting of the sails, the ship's course and position and the weather. But if whales were spotted or taken, or if the ship sighted another vessel, that would be noted in the log."

From his office in the rare book room of the John Hay Library, Sherman ducks into a nearby storage area and emerges with the log of the bark *Pioneer,* which left its home port of New Bedford, Mass., on June 24, 1851, and was at sea until April 8, 1854. The leatherbacked accounting ledger with ruled columns is one of 14 such logbooks in the Brown collection. In the lefthand margin, next to an entry, is an ink drawing of flukes (the whale's huge tail fins) disappearing beneath the waves.

"That means they sighted a whale and may have lowered boats, but he got away," says the librarian. "Often, certain species of whales would sink if struck improperly and might show up on the surface a few days later as a 'stinker.' When they deteriorate, they do smell pretty bad."

Sherman turns the page. This time, there is a picture of an entire bowhead whale, indicating a successful capture. "It's either a pen and ink sketch," he says, "or was printed with a wooden whale stamp."

Nearby is an entry written with a fine-tipped steel pen. It reads in part: "8 a.m. lowered and got a whale to larboard boat. Took him alongside . . . 40 sail in sight, 7 of them boiling [boiling down the blubber to render the oil]."

"That log-keeper could write a pretty clear entry," says Sherman. "Often the first mate, who kept the log, had only a

third-grade education and wrote in a phonetic manner." But, he adds, "these New Englanders were good observers."

Not surprisingly, the volume of records extant follows the fortunes of the industry. Few are available for the 18th century: The earliest American log that Sherman is aware of dates to 1762. The peak volume seems to have been reached around 1844.

The whaling industry was dealt severe blows by the Civil War and the discovery of oil in Pennsylvania in 1859. Soon, refined kerosene was replacing whale oil in streetlights and ordinary lamps. Toward the end of the century, the industry's fortunes revived somewhat. New England vessels, putting out of San Francisco, headed for the Arctic in search of the bowhead whale whose flexible bone was prized for buggy whips and corset stays. "It's rather amusing," says Sherman, "to think of those rugged New England whalemen going North to support the corset industry."

Changes in women's fashions put a crimp in that boom. From the 1890's on, there is a steady decline in records. Only a few remain from World War I to 1922. Yet, despite all these vicissitudes, Sherman estimates that up to a million pages from logbooks and journals survive.

Sherman, who recently received funding for his project from the Marine Mammal Commission of the U.S. Department of Commerce, hopes to have the first computer-produced world index of existing whaling logbooks and journals within a year.

What might he do for an encore?

"Some day," he says, "I might like to find out about my great grandfather. He was a shipmaster. There's a portrait of him in our dining room, with a ring through his left earlobe and an anchor emblem on his tie. He must have been quite a salty character."

But right now, the rare book librarian is too busy chasing whales. □

Lawman at East Fishkill

Up in the valley with TV's Wyatt Earp and friends

It's a long way from Albert Schweitzer's Africa to an IBM plant in New York's Hudson River Valley. But the connection was made in April, when television's erstwhile Wyatt Earp (alias Hugh O'Brian) brought 125 teenage friends to the East Fishkill plant for a look around. The visit gave them a chance to meet with IBM President John R. Opel, who talked with them about data processing and automation and answered their questions on everything ranging from computer technology to the effect of computers on the individual.

The questions were far from rhetorical. Example: Do you think IBM is monopolizing the computer industry?

"No," Opel answered. "Look at the characteristics of an industry that is 'monopolized.'" First, he pointed out, it never changes; it is one where control doesn't permit change. Second, prices typically are kept at a persistently high level. Third, new people do not enter that field of business. These characteristics, Opel said, are not true of the data processing industry because it is constantly changing. New businesses are coming into the field all the time. And, most important, prices have decreased in a steep curve.

What exactly were actor Hugh O'Brian and 125 high school sophomores doing at East Fishkill?

It all began back in 1953, when O'Brian called on Dr. Albert Schweitzer at the latter's Lambaréné mission in the Gabon Republic of Africa. "One of his remarks," O'Brian recalls, "struck home with me, since my schooling was terminated early when I enlisted in the Marine Corps: 'The most important thing in education,' he said, 'is to make young people think for themselves.' As soon as I got home from that trip, I undertook to put his words into action by setting up the Hugh O'Brian Youth Foundation."

The idea of the HOBY program is simple: Bring a select group of high school sophomores with demonstrated leadership qualities together with a group of distinguished leaders in business, in-

dustry, education and government, and let the two interact. Why sophomores? Because, says O'Brian, they have two more years of high school to go, allowing them time to do even more with their leadership qualities, and to motivate classmates as well. All sophomores in the nation's 21,000 public and private high schools are eligible, and they are nominated by their schools.

O'Brian chose "America's Incentive System" as the theme for recent years. This year's seminar (the 20th) was coordinated by Columbia University in New York City, where the students met, among others: William M. Batten, chairman of the board, New York Stock Exchange; Walter Cronkite of CBS News; Robert Jastrow, director of the Goddard Space Institute; and Muhammad Ali. □

IBM President John R. Opel shares the dais with Hugh O'Brian, right, at East Fishkill.
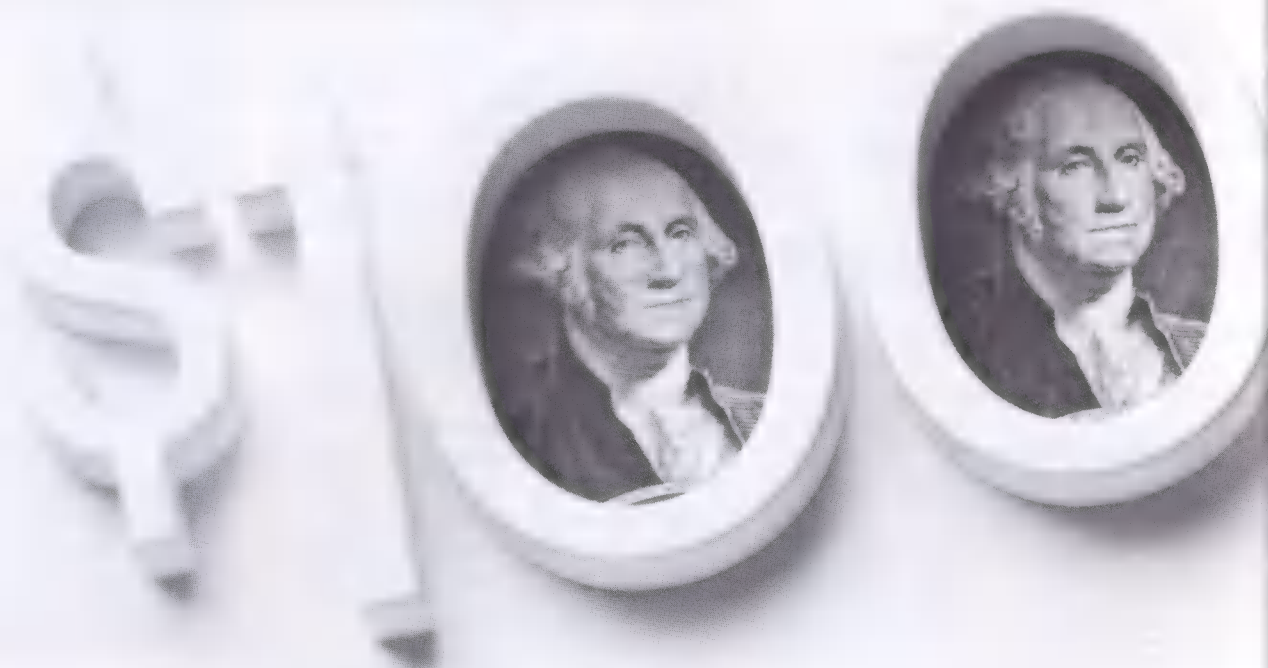
How to get rich in a hurry

All it takes is a good idea. Your cut? 25% of first-year savings, another 10% of the next.

If you've ever wished for a chance to sell a $100,000 idea, you've just broken off the long end of the wishbone.

The suggestion program is now paying that much—$25,000 more than before—for ideas that improve IBM's products, operations or services.

Practically all the program's other awards have been increased, too. The bonanza many employees experienced from suggestions used to be a flat 20 percent of what their idea saved the com-

pany during its first year of use. Now it's 25 percent of the first year's savings—plus 10 percent of the second year's.

This is the biggest boost in award money since the program began 50 years ago. Over the years, some 600,000 awards have earned employees over $40 million. Ideas have cut the company's expenses by more than $200 million.

"Cost competitiveness is a major factor in today's marketplace" says Frank T. Cary, IBM chairman of the board. "The
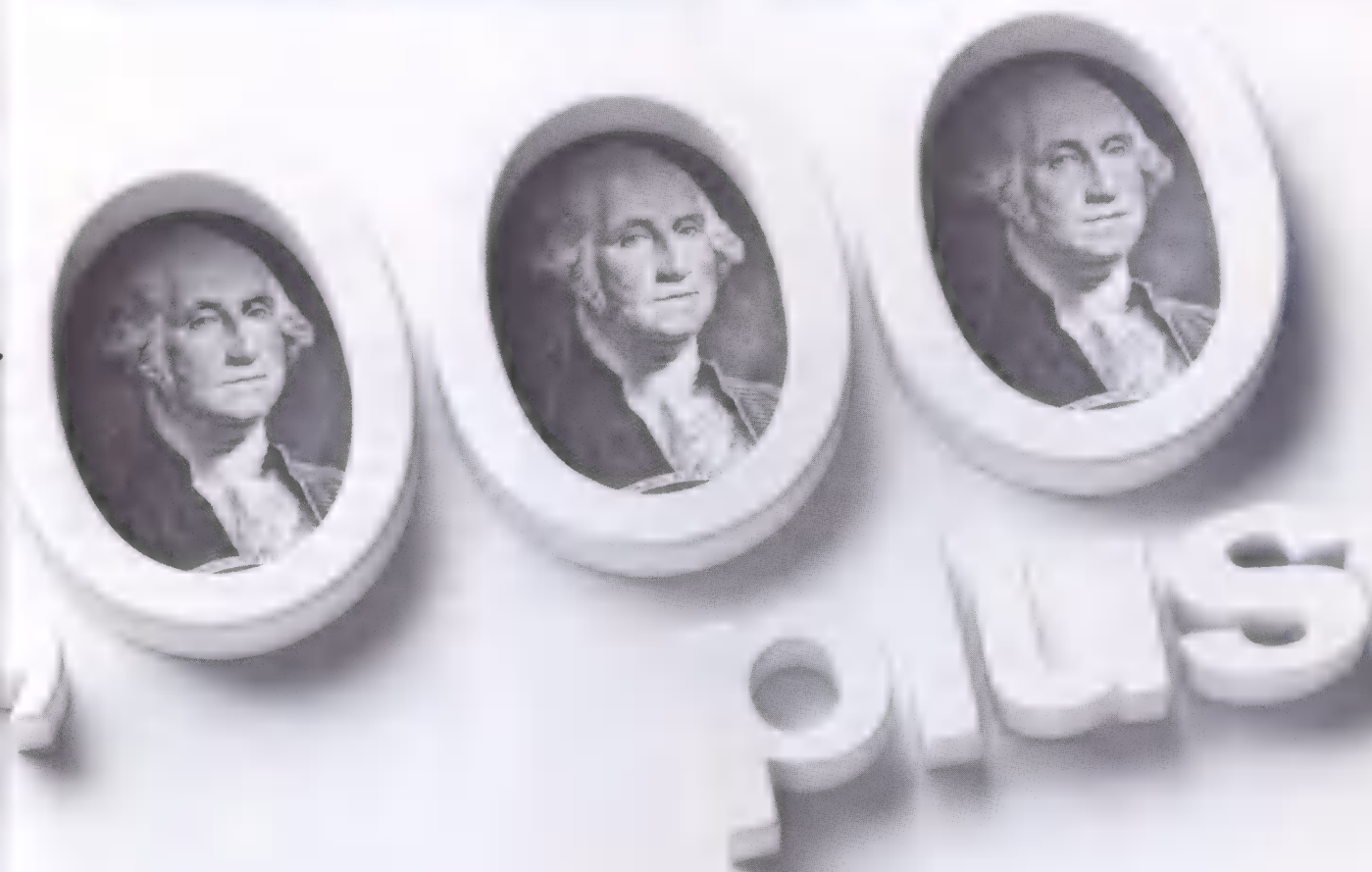
dollars saved represent part of the productivity that is helping to keep the costs of our products down. They're also an excellent example of how the imagination of our people helps move the business ahead."

The idea behind adding a percentage of the second year's savings is to encourage quality suggestions that have a longer life. IBM is one of the few companies in the country with this provision.

It has also caused IBM's suggestion plan administrators everywhere to prepare for a deluge of new suggestions. Last year, over 150,000 were processed worldwide, and over 26,000 suggestions made their originators some $3-million richer.

However high winnings may be in the future, past records will still look good.

In all, more than 100 employees have won $10,000 or more. The top award to date, $75,000, was won seven times by employees in the U.S., Canada, Austria and Germany—most recently by Frank York, a senior customer engineer in Waltham, Mass., for eliminating much documentation needed to update machines in the 3600 finance system series.

The suggestion program has come a long way since Earle Dennis, an Endicott employee, won one dollar in the first award ceremony back in 1928. Twenty-nine employees won 36 awards that year. For a grand total of $123.50. □

—MARTIN J. HAMER

For the defense

At long last, IBM gets its day in court with the opening of its defense in a marathon antitrust trial.

After 473 days of trial, the calling of 52 witnesses—including 78 days on the stand for one of them—and the placing in the record of 3,200 exhibits, three years after the case was started and nine years after it was filed, the Justice Department at last finished presenting its antitrust case against IBM.

The procedural halfway point in what is indisputably the longest and, many say the most important antitrust case was reached at 11:25 A.M. on April 26. At page 71,857 of the trial transcript, the Justice Department's lead attorney, after a morning of tidying up legal loose ends, pronounced, "The Government rests . . ."

"That's what I wanted to hear," replied Thomas D. Barr, IBM's chief trial attorney.

Following IBM Chairman Frank T. Cary's instructions " . . . to present IBM's case as crisply and expeditiously as possible," Barr estimated to Judge David N. Edelstein that, if the court meets four or five days a week, he could possibly complete IBM's defense in one-third the time the Government had taken to set forth its case in the U.S. District Court for the Southern District of New York at Foley Square.

One potential bottleneck: the Government's plans to take testimony again from all of IBM's trial witnesses. Permission to redepose had been granted despite

IBM's caution that, unless the Government set a brisk pace, the trial would be delayed.

The only surprise for the court-watchers present was IBM's decision not to make a motion for dismissal—a largely routine legal step that many had taken for granted. In such a motion, it is argued that the plaintiff's evidence is so weak that the case should be dismissed even before the defense is made. (Federal judges granted such motions to IBM in the Greyhound and CalComp cases, following completion of the plaintiffs' cases.)

In this instance, Barr explained, the presentation and consideration of the motion would be "such an enormous undertaking that it would delay the trial for . . . an extensive period of time . . . "

Clearly, IBM was ready and eager to start its direct case the minute the Government rested—and would have done so if a lunch break hadn't, by coincidence, intervened. Following an hour-and-a-half recess and a conference in the judge's chambers, Dick Case was sworn in as IBM's witness.

Case, group director of advanced sys-

tems development, DP Product Group, was the first of 94 live witnesses IBM listed when it filed a description of its case on February 8. That was down 58 from 152, a reduction made possible when both sides stipulated that the testimony of 12 IBM customers would represent the points that would be made by all 70 of the customers scheduled to testify for IBM.

Finally, IBM was having its day in court. —ERNIE BAUER

When company Chairman Frank T. Cary took to the podium at the stockholders' meeting in Denver, he took time to refute implications that the trial of the Justice Department's antitrust suit has been lengthened by IBM delays. "It is the Justice Department and not IBM," he told a reporter afterwards, "that has turned this into the Methuselah of antitrust cases."

Following is the text of his comments on the trial at that meeting. You may have seen it before in a special communication to stockholders. But because it is so definitive a summary of the company's view, Think *presents it again.*

It is an appropriate time to correct misinformation and myths. Several allegations have been made about IBM's actions in the Justice Department case, and I believe all IBM stockholders and employees and the public deserve to have the record set straight.

The suit is now nine years old. It has outlasted six attorneys general in three past administrations. It has been three years at trial. And we have not yet had a chance to begin our defense.

In all this time, the IBM Company has not been dragging its feet. Contrary to one typical rumor, IBM did not dump 30 tons of paper on the Antitrust Division in

an effort to delay the trial when the suit began. Nothing like that ever happened. In fact, the Division has taken almost all of our documents from those that were selected by other suits against IBM.

When you look at the record, I believe you can come to only one conclusion. It's the Antitrust Division, not IBM, that has turned U.S. vs. IBM into the Methuselah of antitrust trials.

The Government filed its case January 17, 1969. For nearly three years they did nothing, until late 1971—when they fielded a new team of lawyers. And what did this team do? Despite IBM's repeatedly announced readiness to go to trial, they asked for delays—twice in 1972, twice in 1974. Then in 1975 they amended their complaint to include some totally new charges.

Finally, the trial began. And now, almost three years later, they have fielded a brand new legal team that is trying to start all over again, reopening discovery of IBM's trial witnesses, redeposing people whose depositions were completed three years ago.

This is not only the biggest antitrust case in history. It's the first case with unlimited substitutions!

Now let's look at the major allegation: that IBM is a monopoly.

The absurdity of that would be apparent to anyone who talks to IBM's sales

representatives. Just try telling them that they don't have much competition.

Or just look at the industry: Thirty years ago it didn't even exist. Today in the U.S. it includes more than 4,000 companies: manufacturers of complete systems, manufacturers of individual products, leasing companies, time-sharing companies, system integrators, software houses, service bureaus, and used equipment companies. Of more than 800 of these companies that were deposed in the Justice Department suit, over 200 entered the industry since the suit began.

• It's an industry with tens of thousands of customers, and more than 150 thousand computers installed.

• It's an industry that, over two decades, had a growth rate more than 35 times that of the economy.

• It's an industry that between IBM's first computer, the 701, and today's 3033 has improved price/performance for its customers more than 100 times.

• It's an industry that exemplifies technological change: of all the computer systems IBM manufactures today, not one was on the market when the suit began.

Let me repeat that: Not one computer system IBM manufactures today was on the market when this suit began.

This unparalleled achievement resulted from flourishing competition. It could not have occurred otherwise.

The antitrust laws are designed to promote better products and lower prices for consumers, and this is happening every day in our business.

I hope the Antitrust Division lawyers find the facts embarrassing. I hope they realize the facts clearly show that this lawsuit should never have been brought.

You know, I sometimes wonder whether the Administration—concerned as it properly is about inflation and balance of payments—realizes that the Antitrust Division wants IBM to bring fewer new products to market and charge higher prices.

That is what the Division's lawyers and economists are saying down in Foley Square. We think they are turning the antitrust laws on their head.

So much for the myths. When you lay them against the facts, I think you can see why we remain so confident of our position.

Let me sum it up this way: We have always been opposed to delay. We have done everything we can to speed up this case. Before too long we should have our turn at bat.
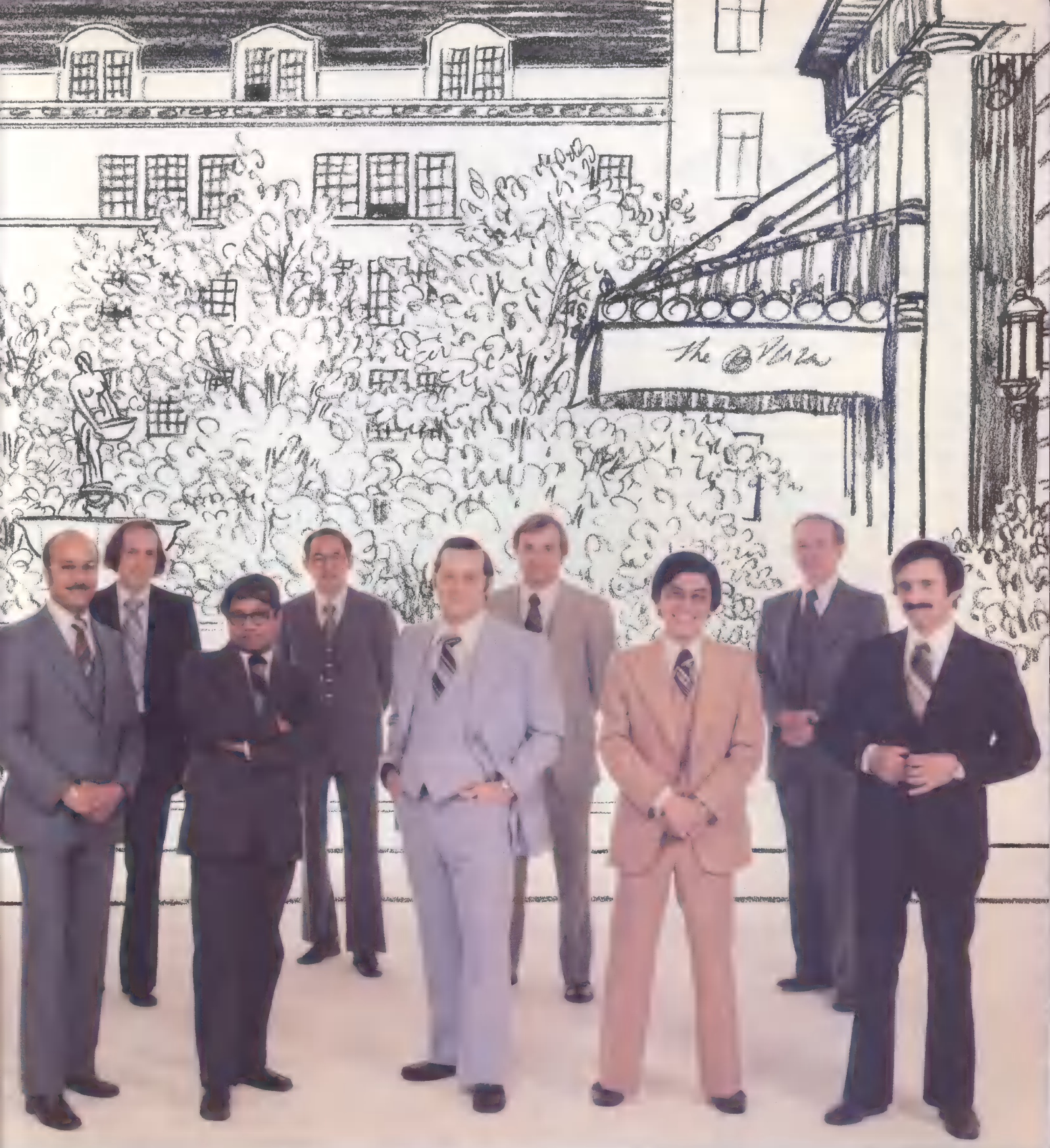
I want you to know I have instructed our lawyers to present IBM's case as crisply and expeditiously as possible. We believe we are right. We want to get this over with. □

Sweet seventeen

Forget the rain that doused New York City that May evening in a cloudburst of midsummer proportions. Inside the Waldorf-Astoria Hotel, everything was coming up roses for this year's corporate award winners—17 of them.

The awards given at this 18th annual IBM Corporate Recognition Event, where a total of 101 employees from nine coun-

tries were honored, amounted to $370,-000. They ranged from $10,000 to $60,000, and the span of ideas that earned them was even greater.

Five employees shared $100,000 for their work on the Arsenic Emitter, a new device that improves semiconductor performance and lowers the cost of increased circuitry density.

Three employees shared $60,000 for a new process for orienting magnetic particles on disks. The process establishes a new base in disk technology for further enhancements and products.

Two employees shared $30,000 for the creation and development of Installation Productivity Options. These IPOs bring about significant productivity im-

provements for field personnel and customers.

Seven other individual awards, ranging from $60,000 to $10,000, were granted for such innovations as Level Sensitive Scan Design (for reduced engineering changes and easier machine "debug"), a monolithic memory cell, a digital circuit invention, a programmable logic array device and design technique, a high-productivity field-effect transistor chip design system, an improved selection mechanism for a typewriter, and software development improvements for greater programmer productivity.

It's achievements like these, said IBM Chairman Frank T. Cary to the 353 dinner guests in the Waldorf's Grand Ballroom, that offer powerful proof of the company's leadership in research and development. IBM, said Cary, "has always understood the need to explore new product areas and strike out in new technical directions."

Cary took note of the sometimes insufficient awareness of the company's "R & D" accomplishments. Part of the reason, he said, may be "because we don't rush to incorporate every innovation into our products.

"There's a good reason for this. We want to deliver products of the highest quality, performance and serviceability. And to ensure this, we often test the

At the awards dinner in New York City, IBM Chairman Frank T. Cary congratulates new IBM Fellow, Dr. Alan J. Hoffman.

innovations more elaborately than our competition does.

"We feel this is the right trade-off because it helps preserve our reputation for dependability that has been the foundation of our business."

Last year, he said, between 700 and 800 courses were offered IBM programmers and engineers at plant and laboratory sites around the world. There were 65,000 course completions. In addition, there is an active sabbatical program at universities and in other IBM divisions for research scientists. Plans call for its being extended to include technical professionals in the product development divisions.

The productivity that comes from new ideas, said Cary, "is the key to solving the dilemma of inflation and the urgent problems of the planet.

"We must keep our own productivity high and practice our professions at the highest level of competence."

That seems to be a way of life for the new IBM Fellow announced on awards

From left: (1) William N. Johnson, General Products Division, San Jose; (2) Albert W. Ward, GPD, San Jose; (3) Edward B. Eichelberger, System Communications Division, East Fishkill; (4) Paul T. Chang, GPD, San Jose; (5) Joseph J. Chang, System Products Division, East Fishkill; (6) G. Michael Engel, Federal Systems Division, Gaithersburg; (7) Joseph R. Cavaliere, SPD, East Fishkill; (8) William T. Devine, SCD, Kingston; (9) Hiten N. Ghosh, SPD, Poughkeepsie; (10) Robert H. Dennard, Research Division, Yorktown; (11) Madhukar L. Joshi, General Technology Division, Burlington; (12) Tsu-Hsing Yeh, SPD, East Fishkill; (13) Kenneth P. Harvey, IBM Canada; (14) Richard L. Donze, General Systems Division, Rochester; (15) Chyang Lee, IBM Canada; (16) Vincent J. Lyons, SPD, East Fishkill; (17) I. David Shakib, Office Products Division, Lexington.

night. He is Dr. Alan J. Hoffman, a mathematician at the Thomas J. Watson Research Center in Yorktown.

Dr. Hoffman is the 67th IBM Fellow appointed since the program began in 1963 as a way of recognizing outstanding scientists, engineers, programmers and systems specialists. The appointments provide them with the opportunity of pursuing technical projects of their own choice so that they can enhance their contributions to the business.

Hoffman is a lanky, genial man with a zest for his work that often sends him ambling up and down the Yorktown corridors as he wrestles happily with a problem or idea.

He received his Ph.D. in mathematics from Columbia University, then spent a year at the Institute for Advanced Study in Princeton, N.J., and five years with the U.S. Bureau of Standards doing research in linear programming.

"I have the best job in the company," he says. "I have the opportunity to be inspired by problems that come up in the real world in terms of products and programs, and I'm able to use both pure and applied mathematics in an effort to solve them.

"It's fascinating because one moment it's pure, and the next, it's applied."

It's that ability to apply what he knows that propels Dr. Hoffman's contributions to the business. He uses his specialty, combinatorial mathematics, with equal facility to solve numerical problems or problems in management science.

He has contributed new algorithms in mathematical programming and perceived new applications, especially in the area of management science.

Dr. Hoffman has been on the board of editors of many mathematical journals, has been a member of several advisory committees of the National Bureau of Standards and is a sought-after lecturer. He has often served as a visiting professor at major universities and has supervised 13 doctoral dissertations. □

It's 70 now, not 65. And still a personal decision

When President Carter signed the new retirement legislation on April 6, IBM lost no time in making its own plans known. It was, in fact, one of the very first companies to act on the new law. The President had scarcely laid down his pen when IBM announced that it was raising from 65 to 70 the age at which employees must retire—effective immediately. (Government legislation doesn't go into effect until the first of next year.) The new bill raises to 70 the legal retirement age for most people working for private companies.

For anyone going those extra five years at IBM, things will be largely as before, where the company's practices, policies and benefits are concerned. For instance:

• *Pay:* People will continue to be paid in accordance with their job performance, whatever their age. Basic company practices, such as the merit pay system and promotion based on performance, will continue to apply.

• *The retirement plan:* Service and earnings for the years from age 65 to 70 will be treated as they were for the pre-65 years. That is, retirement income credit will continue accruing up to age 70.

• *Medical coverage:* Those who continue to work beyond age 65, and their eligible family members who reach age 65, are entitled to Medicare. Therefore, they will be covered by the IBM Medical Plans with Medicare, which are designed to supplement the hospital and medical insurance of Medicare. Total coverage will generally be the same as coverage under the regular IBM plans.

• *Life insurance:* The maximum coverage after age 65 is $25,000; if coverage exceeds that amount before then, it will be adjusted to $25,000 at age 65.

• *Survivors' Income Benefit:* It remains at three times annual compensation, while a person is an active employee, at any age.

• *Pre-retirement Spouse Option:* If elected by the employee, it remains in effect until retirement at whatever age, or until cancelled by the employee.

• *Retirement education assistance:* Employees working beyond age 65 may participate in the company's Retirement Education Assistance Plan. Eligibility may begin as early as 52 for those who will have 15 years of service by age 55; it continues until two years after the actual retirement date.

• *Reemployment:* With the change in retirement age, employees who have already retired, and wish to apply for reemployment, will be considered, along with other applicants, for available openings, based on their qualifications at the time they apply. Additionally, retired employees may now be considered for temporary employment by the company.

Since retirement is a very personal decision, and there are many influences on that decision, it is difficult to predict the effects of the new legislation on IBM and the country at large. As President Carter noted when he signed the bill, the new law also provides for major studies of whatever impact it may have on people, the business world and the economy.

Despite the direction of the new legislation, more and more people across the country are opting for retirement even before age 65. (The new law does not affect early retirement plans.) In 1977, for example, more than 80 percent of the people who retired from IBM did so before age 65, a trend seen also in other companies. □

year and considers them choice. "IBM people have either been moved before or they've been fully informed about real estate transactions," he says. "They know what an escrow account is and what closing costs are."

Transfers from Franklin Lakes, Westchester County, Connecticut and Florida, find house prices slightly less, but the lots smaller. On the other hand, the real estate taxes are usually half what they were accustomed to.

"Lexingtonians love Lexington, and you're a dyed-in-the-wool Lexingtonian shortly after you get here," says Larry Martini, the site's manager of personnel, who moved to Lexington a number of months back. "Ask IBM people where they'd prefer to work in the U.S., and they think they prefer Boca Raton or Tucson. Lexington is usually second or third choice. But once here, few want to leave.

"As a family we've found a magnetism to this place. We hated to leave Ridgefield, Connecticut, and our friends there. But once here, we found ourselves part of the hotbed of avid Lexington sports fans. That includes going to Cincinnati to cheer the Bengals and Reds. Going to the Keeneland Racetrack to watch those exciting thoroughbred races. We live in the shadows of the U. of K's new 58,000-seat football stadium. Our kids are being subliminally indoctrinated by the way of life here. In no time at all they were wearing U. of K. T-shirts."

IBM is credited with having set many of the local standards for industry and for corporate citizenship in Lexington the first dozen years. It is also regarded as having begun a community growth that continues today. In the 1960's alone, Lexington's population rose 72 percent; the city's payroll taxes climbed 200 percent; bank deposits doubled; car registrations tripled; retail business dollar volumes increased two and a half times; Lexington's unemployment dropped to three percent.

"For every job we created inside," says Lassetter, "we were creating at least one outside."

But if IBM's work force leveled off about 1970, what has kept the Lexington
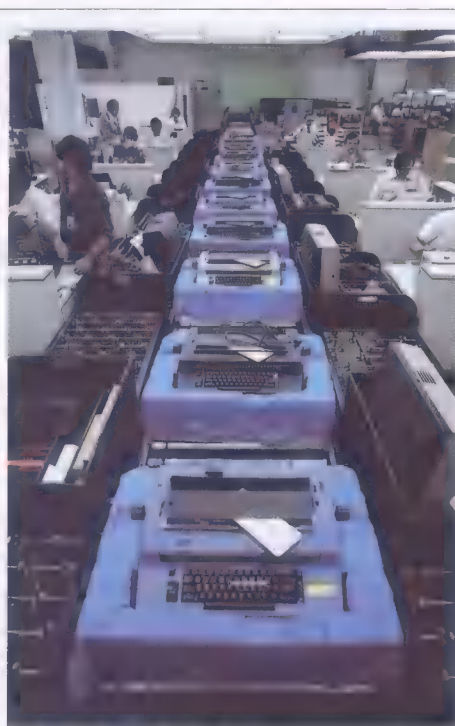
Lexington's newest, a secretary's friend

What's hot off the assembly line at the Office Products Division's Lexington plant? Answer: The IBM Electronic Typewriter announced May 24.

Its two models use a microprocessor chip, less than a quarter-inch square, to help provide another advance in office efficiency. (The chip is made by IBM's General Technology Division in Essex Junction, Vt.)

The introductory advertising states simply that the new machines take "most of the things a secretary dislikes about typing and makes them automatic." Erasing. Underscoring. They set up column layouts and store formats and tab settings used most in the office. The Model 60 also stores selected phrases often used. Even the carrier return is automatic, and, after a letter has been typed, the typewriter types the name and address on the envelope automatically.

The new machines are in the tradition of IBM's typewriter development, which includes the first commercially successful electric typewriter, proportional spaced typing, the single element typewriter and the correcting typewriter.

During its development and manufacturing buildup at Lexington, the confidential project was coded "Keeneland," after the famous Lexington racetrack where, each year, thoroughbred yearlings are auctioned as potential champions. No less a future is expected for the new IBM typewriters. Purchase price for either model is $1,675.

area growing?

"Partly the momentum that IBM helped establish," says Foster Pettit, who was Mayor from 1972 until early this year. "Partly because the University grew from 10,000 students in 1960 to the present 22,000. When all those students, approaching the marrying age, come here from elsewhere and like the place—and most of them seem to—they stay on and settle down. They keep us growing. And that quality of people attracts more business and growth."

Between the University, now Lexington's largest employer, and IBM, says Pettit, the city felt scarcely a ripple through the recessions of the 1970's.

"The demand for the IBM products made here held up," Pettit says, "and the University didn't lay off anyone. The largest layoff was 150 from one of the smaller companies here. But the community stayed stable, and that resold Lexington to a lot of people."

The big event in Pettit's administration was consolidating the city's government with that of Fayette County, after the consolidation was voted in.

"The county officials feared engulfment," Pettit says. "For example, the city population was 120,000; the county's 65,000. There were 250 city police and 42 county police. There were wide differences in training, compensation, benefits and qualifications in all municipal services. I turned to IBM for help, as I was to do a number of times later, and Clair Vough, then the general manager, assigned me Tom Sullivan, who was his manufacturing planning manager.

"At that time in this country, there had only been 18 successful city-county consolidations and 43 failures. Ours was an exemplary success. Sullivan helped bring it off with intelligence and fairness."

Sullivan, an engineer who was first sent to Lexington in early 1956 to interview job applicants for the new plant, is now with IBM's General Business Group/International in White Plains.

"We were sensitive to the impact we might have on Lexington from the start," he says. "We didn't want to dominate, but we didn't want to shirk our responsi-

bilities as new citizens. We didn't push and harangue for improvement, but we rarely turned down a plea for help."

Neither do Lassetter and his staff today. They are among the trustees, or advisers, of three universities in the area; directors of both Lexington and state chambers of commerce (Frankfort, the state capital, is a half-hour's drive away). They help power the United Way, the Boy Scout Council, the Council of Christians and Jews, the Committee to Employ the Handicapped, Junior Achievement, and Lexington's Deaf-Oral School.

IBM people visiting Lexington for the first time are inevitably taken by the interesting mix of lingering heritage and the recent cosmopolitan changes. Dozens of motels have sprouted along Interstate-64 (east-west) and I-75 (north-south), which cross at Lexington. Those nearest the plant site are usually crowded with IBM transients.

All of them have usually had one experience in common: the difficulty of reaching Lexington. Though the city fathers proudly point out that the Bluegrass airport activity has risen 18 percent in just one year, much of it is of corporate aircraft. The four commercial airlines that serve Lexington have few direct flights to major cities. Out-of-towners often rent cars in Louisville or Cincinnati to keep Lexington appointments, in lieu of unsatisfactory connecting flights. Those returning to Boulder frequently fly southeast to Atlanta to change for a direct flight west to Denver.

The Lexingtonian's attitude toward this logistical snarl may be summarized by that of the airlines clerk who was approached by Larry Martini, then commuting to New York while completing his move to Lexington.

"I've been transferred here," he told the clerk. "I've tried all four airlines, and I wonder if you can tell me the best flight combination between here and New York?"

The clerk tried his best with the schedule but ended up shaking his head. Finally, he closed the book and waved his hand toward the window. It was a sunny day. In the distance grassy fields fairly sparkled, and handsome horses stood in the shade of stately hardwood trees.

"Look," said the clerk. "If you've been moved down here, why on earth would you want to know an easy way to get to *anywhere* else?" □

There's a downtown crowd there, too

"All IBM employees in Lexington, Kentucky, work in the Office Products Division's plant or laboratory there."

True or false?

Those who answered "True" will remain after class and write the following statement on the blackboard: "IBM has sales and service offices of four divisions there that are frequently overlooked in articles about Lexington."

Two hundred people staff the Data Processing, Field Engineering, General Systems and Office Products divisions' offices, all located in an attractive, modern building on Harrodsburg Road, in the southwestern quadrant of Lexington, five miles from the plant/lab site. Its grounds are bordered by a traditional Bluegrass white fence. The "landlord" is W. J. "Bill" Booker, manager of the DPD office.

Though a "location" office, reporting to the DPD branch in Louisville, the Lexington DP business is sizable and growing steadily. Its 23 marketeers and 10 administration people deal with a circular territory ten miles beyond Lexington's city limits. Its accounts include the Commonwealth of Kentucky, in Frankfort, the state capital, 28 miles to the west.

Lexington is said to be the 14th fastest growing city in the country, and the growth of IBM's sales offices there reflects the fact. For instance, the formation of the new General Systems Division's sales force from DP's in early 1974, substantially reduced the installed base of the Lexington DP office. In the four years since, the DP office has not only made up the difference, its installed points are 20 percent greater.

Similarly, the 20-person GSD marketing office, managed by J. J. "Jack" Flynn, is selling against a plan nearly three times the size of the 1975 plan. Selling small systems introduced since 1975 in 45 counties—the eastern third of Kentucky—Flynn and his people have already sold more this year than in all of 1977. The office's installed base is nearly double the original.

Neither the DPD nor GSD sales offices have anything to do with the big IBM lab/plant site, but the customer engineers do. In fact, R. E. "Bob" Simmers, the Field Engineering branch manager, says the Office Products site is the biggest DP account in Region 7, containing not only leading-edge software but enough central processors, disk drives, terminals and keypunches to require the full-time service of 11 CEs.

The plant and lab also use so many small systems, Lexington's GSD CE manager, J. L. "Jerry" Brandenburg, assigns three CEs to the location.

Does the Office Products Division marketing branch enjoy a special advantage, being located near the fountainhead of typewriters and supplies?

R. A. "Al" Giffin, who leads the force of 45 men and women, shakes his head. "Our customers are always disappointed to learn they have to wait just as long for a product as anyone else. It may frustrate them, but they like us for playing fair."

The OP products in use at the plant and lab are processed, at no commission, through the Lexington OP branch and are, hands down, the largest account of J. N. Robertson, manager of 40 OP customer engineers, who keep the large site's Office Products equipment up and running, along with the sales branch's installations.

"With 7,000 IBM people in the area," Giffin says, "we get lots of help. If anybody can discuss the quality of our typewriters at a social gathering here, it's our plant people. After all, they put the quality into them."

to think

For the first time in 17 years, Ben Carucci does not appear on the masthead as art director. Ben died suddenly on April 25 at the age of 44. In the entire 43-year history of *Think* magazine, no one has served the book with greater zeal or affection than this gentle and talented man.

In the chips

What an intriguing and provocative cover for your January-February issue of *Think* I happened to see recently.

Doil F. Felts, Ed.D.
University of Missouri

Rules of the game

I read with interest Geoffrey D. Austrian's "Storm Warning" article in the March/April issue.

Since I am familiar with and in favor of free world trade, I appreciate his concern for the increasing signs of protectionism on the part of many countries, including the U.S.

However desirable free trade may appear, though, it will not produce those economic rewards proffered in international economic textbooks as long as some members of the Club, i.e., Japan, continue to play by different rules.

Ernest Sacco
Sterling Forest, N.Y.

We agree that parity is the desirable goal. But it should be noted that Canada, Mexico, Brazil and some 40 additional developing countries have duty rates higher than Japan.

Donor dilemma?

In regard to your article, "Nothing to it," [January/February]: I recently was a chairperson of a Red Cross Blood Drive in my community, and a history of or direct exposure to infectious hepatitis was a reason for deferral no matter how long ago it occurred. It seemed to me that your article suggested that one would not be turned down as a donor, but this was not my experience.

JoAnn Lynn Balzer
Marina del Rey, Calif.

According to Dr. Byron Myhre, President-Elect of the American Association of Blood Banks, "If you have had hepatitis, you are permanently rejected as a blood donor. If you have been exposed to hepatitis and have not contacted the disease, you are eligible to donate blood after six months. Any donor unsure of his eligibility should contact his local blood bank. They'll take down your medical history and inform you of your eligibility."

Gender trouble

In the same issue containing a cover story on women in engineering [January/February], your article on the 1977 business record was laced with male references. Are customers always men? Are CE's always HE's? Can't we send "man-months" to the same place "man number" went?

Gene Biancheri
Franklin Lakes, New Jersey

Dangling conversation

Your magazine is outstanding in many ways. Articles are presented which are informative, useful and interesting.

However, incomplete sentences can only detract from a literary work. I refer to the subtitle on page 24 [March/April]: "In a riposte to the Antitrust Division," and to the paragraph on page 48: "If only they had been signed." Someone in your editorial department should check more closely.

E. S. McCue
Armonk, N.Y.

We agree that it can be overdone, but there are times, mostly in headlines and blurbs, when it adds impact. That's where we occasionally indulge ourselves.

A nation or not?

I enjoyed your article on "The East" [January/February]. However, there is a mistake in the first paragraph. The third sentence starts, "The non-Communist Far East nations . . ." and the next sentence continues, "Some—South Korea, Taiwan . . ." Please note that Taiwan is not a nation.

Henry E. Bender Jr.
Santa Teresa, Calif.

Open season on bias

I was very impressed by the January/February issue. I especially enjoyed the article on Howard Thurston ["Old 46"] and the picture of him on the inside cover. It is very refreshing to see his life style and hobby presented in a way which does not bias one way or another the moral issue of hunting.

Fred McFee
Austin, Texas

The big picture

Your article in the March/April issue titled, "He Goes with the Territory," was very well done. Harrison Kinney was able to give a very descriptive and factual account of this huge territory that is beyond the imagination of many readers.

As the CE Branch Manager for that territory, I have made the same trip with Tom Clump that was made by the author. His ability to relate the scene and the action in such detail is an excellent piece of journalism.

D. B. Houtz
Salt Lake City, Utah

Reading matter

As a retired SRA senior staff associate, I enjoyed the two-page spread entitled, *"All the World's a Classroom* [January/February]. There is one error in the story. The *Reading Laboratory* was not the first instructional material published by SRA.

The Better Reading Books, I, II, and III by Elizabeth A. Simpson were available several years before the first *Reading Laboratory* was shipped in 1957.

Dave C. Tripp
Bradenton, Fla.

Rights for wildlife

For the past five years, in my spare time, I have been working on a volunteer basis for an international animal welfare organization attempting to promote a new and positive ethic toward animals: one of respect and admiration and not one of destruction and consumption.

Your article in the January/February issue ["Old 46"] greatly disturbed me. Mr. Thurston's hobbies epitomize the negative ethic.

Richard C. Kenly
Fair Lawn, N.J.

Ann Landers we're not

Sorry, no problems, please. But if you've got a beef on something you read—or even if you liked it—write a Letter to the Editor, Think, 7-11 South Broadway, White Plains, New York, 10601.

catch up

A DAY LIKE ANY OTHER DAY

When Wall Street exploded on Monday, April 17, with a 63.5-million-share day on the New York Stock Exchange—eclipsing the old record of 52.3 million shares traded the previous Friday —a pair of System/360 Model 50s stayed handily on top of the record volume. Installed in 1973, when less than half that volume would have sent brokers reeling, the Model 50s kept pace with floor transactions; recorded trading in NYSE-listed stocks on other exchanges, and relayed latest prices to quotation services, brokerage houses and news and wire services located across the country.

Meanwhile, a pair of System/370 Model 158s were matching the buy-and-sell transactions at Securities Industry Automation Corp., the industry-owned continuous net settlement system. Another pair of 158s at Depository Trust Company recorded changes in ownership.

Although extra Field Engineering Division customer engineers stood by during the week ending April 21, when a record 212 million shares changed hands, it was business as usual for the IBM team. "We didn't even hear from my customers," says Mort Epstein, Data Processing Division account executive, who has spent 26 years with IBM on the Street.

WORD OF MOUTH

The fringe benefit most in demand these days is dental insurance, according to a recent report in *The Wall Street Journal.* More than 35 million employees in the U.S. and their families are covered, compared with 7 million a decade ago. In 1977, over 140,000 IBM employees and retirees received more than $32 million in dental claim benefits for themselves and their families. The IBM Dental Plan was initiated in 1973.

TOOTH ACHE
DROPS
DIRECTIONS.
Saturate a small piece of Cotton with the drops and apply to hollow of tooth.
HENRY J. BATE,
DRUGGIST.
SUCCESSOR TO GALE & BLOCK!
126 N. CLARK ST. COR. OHIO.
AND 44 WELLS ST
CHICAGO.

MORE TO COME ON THE CALCOMP SUIT

Should CalComp's $102-million antitrust suit against IBM have been dismissed last year? Or should the case have been decided by the jury? The question was argued May 2, on an appeal brought by the Anaheim, Calif., peripherals firm before three judges of the U.S. Circuit Court of Appeals sitting in Los Angeles. In dismissing the case last year, Federal Judge Ray McNichols found no substantial evidence to support CalComp's claim that IBM's price reductions on disk drive products violated the antitrust laws. It is difficult to predict when the appeals court will reach a decision.
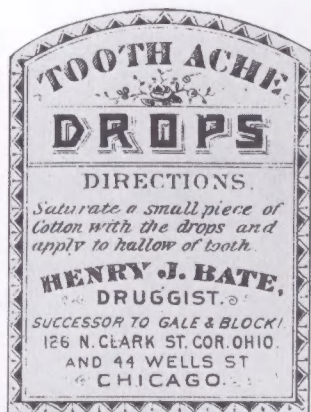
DEFERRED PAYMENTS UNDER FIRE

IBM recently went on record as opposing an Administration proposal that would change the way the U.S. taxes income that affiliates of U.S. companies earn abroad. At present, U.S. companies pay foreign taxes on income as it is earned abroad. But they may defer payment of additional U.S. taxes on that income until it is brought back to the U.S. In a statement submitted to the House Ways and Means Committee, the company commented: "A future in which our heavily subsidized foreign competition receives an additional and substantial advantage from the U.S. Government as a result of unilateral U.S. repeal of deferral is a future where our long-term competitive position would be negatively affected."

GETTING READY FOR THE TOKYO ROUND

According to a recent report in *Electronic News,* the U.S. Government has asked Japan for a further reduction of import tariffs on computers and peripherals for the Tokyo round of tariff negotiations. The U.S., it was said, has submitted a list of over 500 items, including computers, with a request that Japan either eliminate import tariffs on them or reduce them to current duty levels in the U.S. In return, the U.S. has offered to reduce its import tariffs on central processing units and peripheral equipment from the present 5.5 and 5 percent, respectively. Earlier this year, Japan lowered duties on central processing units from 13.5 to 10.5 percent and on most peripherals and terminals from 22.5 to 17.5 percent.

THE PENALTY OF SUCCESS

"Today, if you create a great company," Citicorp Chairman Walter Wriston commented in a recent interview with *Time* magazine, "people take potshots at you because they think that behind every success there must be some dirty secret." Citing IBM, Wriston added: "One of the few scientific edges that we still have on the rest of the world is in computer hardware and software. So the Government is suing to dismember IBM. The question is: What is the public good of knocking IBM off? The ultimate conclusion to all this nonsense is that people cry, 'Let's break up the Yankees—because they are so successful!' "

Think. IT'S A WAY OF GETTING TO KNOW THE BUSINESS BETTER.